

Environmental Humanities:
Transformation, Governance, Ethics, Law 1

Felix Ekardt

Sustainability

Transformation, Governance,
Ethics, Law

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Environmental Humanities: Transformation, Governance, Ethics, Law

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Felix Ekardt

Leipzig/Rostock, Germany

Susanne Stoll-Kleemann

Greifswald, Germany

Sustainability, meaning the demand for long-term and globally practicable lifestyles and economies, is increasingly being understood as the key challenge of our time. But just as today science is often simply equated with natural science, many people think only of the natural sciences when it comes to sustainability science. Undoubtedly, natural scientific and technical knowledge of problem relationships in dealing with nature, resources and climate is important. However, technical change does not happen on its own. In addition, the ecological challenges are simply too great not to aim for a behavioural change as well as technology. This is the starting point of this series of publications.

Some questions are about, for example, the conditions for individual and social change, the means or governance instruments, and normative (ethical and legal) issues about the ultimate goals to be pursued. Transdisciplinary approaches should play a special role, i.e. approaches that do not operate based on disciplinary boundaries but based on questions of content without excessive subordination to established disciplinary dogmas. It is important to the editors that the present series stands for pluralism and expressly gives room to uncomfortable, unexpected and heterodox views and methods. In times in which sustainability research in particular is increasingly influenced by the interests of clients, this openness seems necessary in the interest of truly acquiring knowledge.

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Felix Ekardt

Sustainability

Transformation, Governance,
Ethics, Law

Felix Ekardt
Forschungsstelle Nachhaltigkeit und Klimapolitik
Leipzig/Berlin, Germany

Rostock University
Rostock, Germany

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Preface

When billions of people in the Global South copy the Western model of prosperity, perhaps the greatest challenge of the twenty-first century will arise in our world, which is already overwhelmed by the consumer demands of the industrialised countries and the upper middle classes in the emerging countries. This challenge is usually summarised under the term sustainability or sustainable development. This refers to the goal of lifestyles and economies that can be maintained in the long term and across borders.

So far, the sustainability debate has mostly focused on climate change, energy transition and, in particular, electricity. This book would like to show the following: efforts to date, especially in industrialised and emerging countries, have fallen far short of the requirements for sustainable societies. In addition to technical measures (such as the expansion of renewable energies), the sustainability turnaround will also have to include behavioural change; it will ultimately have to turn into a debate on post-growth, with unclear but by no means insoluble consequences. Furthermore, the sustainability turnaround can only succeed in an interplay of different actors, whereby a key component is a new political-legal governance approach that consistently reduces the amount of resources and sinks used on a broad substantial and geographical scale in absolute terms. To this end, the conditions of individual and social change and the development of effective policy instruments in comparison with previous discourses will have to be rethought. The key to solving various environmental problems is to move away from fossil fuels and to reduce livestock farming.

The social change in technology and behaviour must be aimed less at knowledge than at our conceptions of normality, emotions and self-interest calculations. This has little to do with the frequent demand for more environmental education. Such a transformation to sustainability is not patronising but enables freedom in the long term and worldwide through clear frameworks and distinct rules. This is if we reinterpret freedom ethically and legally in a new and correct way. This does not endanger democracy and social distributive justice but preserves and promotes it. Also, for our happiness and good life, the chances are greater than the risks. With all this, the turn towards sustainability could as well lead to a new conception of freedom, to a new concept of balancing decisions and to a new answer to the question of to what extent normative questions can be decided rationally. Furthermore, newly designed – and more effective – governance instruments can be developed.

With all this, my work in general and this book in particular present (a) a new (social science-based) theory of sustainability but also (b) fresh answers to some core questions of social sciences (or humanities) regarding human motivation, governance and the grounds of normativity. This includes a theory of the conditions of social change and of the effective policy instruments, ethics and the legal foundations of sustainability (on the basis of a newly founded normative universalism with a new understanding of freedom and a new theory of balancing). One could also say that it thus provides a kind of all-round service to environmental humanities. Questions of the disciplines of philosophy, sociology, jurisprudence and religious studies (these subjects form the author's educational background in the language of academic degrees) but also political science, economics, theology, ethnology, psychology, history or cultural studies are touched upon. For this reason, a transdisciplinary foundation of sustainability and in particular of the climate problem is being pursued. Therefore, the book follows the problems rather than the (often arbitrary) disciplinary boundaries. Thus, a certain confrontation with the mainstream in academia, politics and public discourse is inevitable. Furthermore, since sustainability suggests a rethinking of beloved certainties, the book also takes up fundamental questions of various fields of human sciences and attempts to develop them critically.

This book compiles the most important results of my research during the last 22 years for a broad interdisciplinary and international readership. So far, there have been around 50 journal articles and book contributions in English (compared to over 450 in German), but no monograph. In German, this task is fulfilled by my postdoctoral thesis "Theorie der Nachhaltigkeit: Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel" (3rd ed. 2016). However, it is much more detailed and gives more space to details – as well as the documentation of the extremely broad German literature in sustainability research. On the other hand, this book quotes more sparingly (and much more "international") in the interest of better legibility and brevity. Cum grano salis, "Sustainability" and "Theorie der Nachhaltigkeit" are roughly as close to each other as John Rawls' *Justice as Fairness* and *A Theory of Justice*. However, "Sustainability" is much more detailed than various popular paperbacks I have written in German.

This book also attempts to correct some very common misunderstandings that exist in politics, society and science. This makes some common "literature" wholly or partly obsolete because it is based on problematic assumptions. Partly, this concerns especially the (often overly) Anglo-Saxon-dominated typical international journals and their articles. Partly, it concerns certain schools of thought, especially in the human sciences, no matter in which language. To name just a few examples, it is *inter alia* about the following questions: Is epistemological empiricism really tenable, which only believes in quantifiable and reproducible "data" – and regards normative questions as *per se* subjective? Is philosophical (not trivial sociological) constructivism perhaps just as unconvincing as empiricism? Are perhaps all behavioural disciplines biased and a kind of dogmatic – do we maybe need an integrating new approach, which must then present differentiated solutions, e.g. for

ongoing wars about the role of biology for human behaviour? Does the whole debate on sustainability strategies – technological change versus behavioural change – completely ignore the scope of the challenge (for instance in the light of human rights and Article 2 of the Paris Agreement)? Does the same apply to the debate on political instruments, and does this *inter alia* mean that traditional focal points of debates, such as the central focus on price elasticity in the case of economic instruments, have to be overcome?

This monograph seeks to offer new perspectives. At the same time, it will contribute to new fields of study such as sustainability studies or environmental humanities with a work that also offers orientation also for students. To make this monograph usable as a textbook, it includes a glossary, an index, take-home messages at the end of each chapter, a box of questions for repetition at the end of the four main chapters and a summary at the very end of the book summarising all important findings.

My work since 1997 on sustainability issues – and on basic questions of human sciences in general – would not have been possible without many people, whom I would like to thank very much once again. Colleagues, friends, acquaintances, relatives, the audience of about 600 speeches in very different disciplines, countries and auditoriums as well as the constant contact to many journalists through our media work have enriched my thinking very much. Most of all, I thank the members of my Research Unit Sustainability and Climate Policy in Leipzig and Berlin. I would also like to thank my colleagues at the Rostock University (Faculty of Law and Interdisciplinary Faculty), in particular our Leibniz Science Campus Phosphorus Research, which we are intensively involved in with our research on land-use issues from Leipzig and Berlin. Of course, the responsibility for any errors or inaccuracies remains solely with me.

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Felix Ekardt

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Foundations in Natural Science, Economics and Epistemology: Problems, Categories, Strategies, and the Issue of Growth

1

Abstract

This book is a contribution to transdisciplinary (especially human-sciences-based) sustainability research, i.e. research that follows substantial issues rather than disciplinary boundaries. It deals with resource and sink problems, climate change in particular, but also with the major effect of fossil fuels (and livestock farming) on various other environmental problems such as biodiversity loss, disturbed nitrogen cycles, soil degradation, etc. In particular, it deals with the conditions of social change, effective political and legal instruments and well-founded and balanced normative objectives, i.e. questions of justice.

In methodological terms, research on transformation and change, or on motives of human behaviour in general, faces particular challenges because common methods for acquiring scientific knowledge such as surveys or experiments are less reliable than generally assumed, and the pursuit of quantifiable and reproducible facts as well as formalised models and scenarios also contain many pitfalls. This is solved by a new pluralistic approach in the present book, with a strong focus on informal qualitative perspectives. This has also consequences for the research on instruments for transformation and change.

As a definition, justice means the rightness of the order of human coexistence, just as truth refers to the correctness of factual statements. Social distributive justice as a category of material distribution issues is only one element of justice. Sustainability is defined as the political, ethical, and legal demand for more intertemporal and global justice, i.e. the need for sustainable ways of production and consumption. In contrast, a three-pillar concept of sustainability is misleading and askew for a number of reasons. Likewise, sustainability indicators are not a convincing alternative to an ethical-legal normativity, even if they are not oriented towards a pillar logic, for a number of reasons.

Taking stock, the usual fixation of the political debate on financial crises, economic growth, social security, war against terrorism and jobs as a constant distraction from the sustainability issue is proving to be problematic. On the other hand, the correct handle on various resource and sink problems is decisive for the lasting

and global sustainability of lifestyles and economies. In order to comply with a 1.5 °C-temperature limit set out in Article 2 para. 1 of the Paris Agreement (PA), fossil fuels may no longer be used in the areas of electricity, heat, fuel, material use, and agriculture within the next two decades. The phase-out of fossil fuels stands for avoiding the particular devastating consequences of climate change such as millions of deaths, wars and civil wars on resources such as food and water which are getting scarcer, migration flows, massive natural disasters, but also for avoiding exploding oil and gas prices, etc. Addressing fossil fuels – and livestock farming – also stand for tackling various environmental problems such as biodiversity loss, disturbed nitrogen cycles or questions of public health. The countries of the EU are by no means “pioneers” in terms of per capita ecological footprint and supposed reductions (which have so far been exclusively the result of arithmetic tricks). The situation is similar for various environmental areas.

As regards sustainability strategies, the purely technological approaches of consistency and efficiency alone (!) are not sufficient. A debate on this only makes sense, if measured against clear targets such as those set out in Article 2 para. 1 PA. With regard to that, the sustainability challenge is simply too great for a purely technological approach. Sometimes, there is also a lack of possible technological options, especially for environmental problems beyond climate change. Behavioural changes (frugality) must therefore always be taken into account, on a voluntarily basis or not, also because of the manifold ambivalences and possibly also overestimations of renewable resources as well as some ecologically and economically rather unsustainable technical options such as carbon capture and storage (CCS), nuclear energy, geo-engineering or massive afforestation. Frugality does not stand for a normative idea of a good life; as such it would not be tenable ethically and legally. A possible overall concept for consistency, efficiency and frugality in relation to the energy-climate topic will be developed during the course of this book.

The necessity of frugality puts sustainability in a tense relationship to the growth idea that dominates everything today, because new technologies are (possibly) growth-compatible, whereas a reduction in the demand for services and products poses a big challenge. The hope that a mere “decoupling” of economic growth and environmental consumption is sufficient implies – in view of the insufficient scope of conceivable technical measures – accepting far-reaching threats to humanity. “Qualitative growth” of a seemingly non-material nature is unlikely to solve these problems. According to all experience such an allegedly non-material growth is partly itself materially shaped. Furthermore, the idea of constantly (and thus exponentially) improving social care services, knowledge of music, enjoyment of nature, health, enjoyment of art, etc. seems extremely difficult.

The gradual transition to a post-growth society – not deliberately, but induced by effective environmental protection – raises a number of questions for the pension system, the state budget, companies, the banking system and especially for the labour market. Concepts for this are still in their infancy; even more so are concepts for the process of transition to a post-growth society. Whether such an economic form could still be called “capitalist” is questionable, but this issue should not be overemphasised. Notabene: Even if frugality is really necessary, a

consistent change in sustainability is probably still more economical than a business-as-usual strategy, which would ultimately lead to catastrophic distortions.

In epistemological terms, theoretical, normative and instrumental rationality can be distinguished. Rationality conceived purely empirically by economists, sociologists and others is misleadingly reduced to facts and preferably countable things. Also, in transdisciplinary sustainability research, another epistemological basis is a distinction of is and ought and – diagonally to this – an objective-subjective distinction. Facts are, in principle, objectively identifiable. Difficulties of proof and uncertainties also play an important role in sustainability issues, but they do not change this basic insight.

Law is ethics in concrete and sanction-reinforced form, while ethics is able to substantiate the basic principles of law on a universal level, if necessary. Otherwise, ethics adds little to the legal argumentation and balancing of different principles. Throughout the entire book, there is thus a parallelisation of statements from an ethical and legal perspective. Contrary to a widespread opinion, there is nothing normative about proposing policy options. Alleged non-objectivity of normativity is not convincing either.

Keywords

Paris Agreement · Natural science · Economics · Epistemology · Growth · Economic growth · Sustainability strategies · Climate · Fossil fuels · Livestock farming · Consistency · Efficiency · Frugality · Profitability · Population growth · Post-growth · Rationality · Reason · Theory of cognition · Transdisciplinarity · Methodology · Behavioural/behaviour · Governance analysis · Legal/law · Ethical/ethics · Governance · Empiricism

1.1 Problem Statement

If you ask science and politics about the great challenges of the twenty-first century, keywords such as globalisation, the euro crisis, intercultural and military conflicts, terrorism, digitisation and demographic change are usually mentioned. To enable people to live (even) better and more freely in the future, it seems to be necessary to master these challenges. Freedom and prosperity, however, presuppose that a humane existence on this earth is possible at all – or becomes possible for all in the first place. And exactly this could (increasingly) be in question. Because the world is physically finite, and humans are biological beings that cannot exist without intact ecosystems, fertile soils, drinkable water and a reasonably intact global climate. To some extent, these resource and sink problems are also a major cause of why other problems mentioned, such as armed conflicts, arise. To give just one example: Without the hunger for oil, the overall political situation in the Middle East in its current form, including the many dubious political actions of the industrialised countries since the Second World War, would hardly exist. With all this, the debate on ecological limits is also a debate on world peace and on the future of economic activity. Problems with regard to the welfare state, global poverty or

population development can be both causes of climate and resource problems and partly their consequences (*pars pro toto* Gough 2017; Ekardt 2016).

The consideration of planetary boundaries is thus at the centre of today's challenges. And it does not only raise natural scientific and technical questions. Rather, the twenty-first century raises the question of a model of prosperity, economy and society that can be lived permanently and globally, i.e. sustainably. But how great are the challenges really? Is better technology the right sustainability strategy, or is it also about living more frugally – and is this an advantage for human happiness (or is exactly this uncertain)? How do social change and the transformation to sustainability succeed? And what are the major drivers and obstacles for technological and behavioural change (and for human behaviour in general), when one-sided analysis on human self-interest, culture, knowledge, sociobiology or even brain research is dissolved in favour of an integrated, balanced approach? And how can the real transformation process to a better world, learning processes, voluntary “bottom-up” actions on the part of citizens, civil society and companies or political control or governance “top-down” be successful? What can the state, the transnational community and political and legal instruments contribute at all; and what can the market, competition, corporate responsibility and consumers achieve?

There are also normative questions, i.e. ethical and fundamental legal questions. Without goals, there is no standard for assessing strategies (technology versus frugality) and policy instruments. And goals are normative. What could a concept of justice in the twenty-first century look like, perhaps even a universal one? What, in particular, is the right understanding of the equal human rights freedom of all, which also preserves their physical prerequisites and preserves achievements such as basic social security and education in the long term and at the same time at last makes them accessible to everyone? Do we have to give up our deeply rooted local-national perspective in favour of a more global and intertemporal perspective – do we also have to include the interests of people in other parts of the world and the interests of young and future people much more than before? How, moreover, can the many conflicts of a pluralistic world society be resolved in a just balance? Is this really possible through the increasingly widespread economic cost-benefit analysis or indicator systems? Behind all this are also fundamental theoretical questions: Are normative questions reasonably determinable – and how do ethics, law and politics relate to one another – and what can be said about the future of liberal democracy under the auspices of sustainability?

All this is about transdisciplinary sustainability research – and about some of the core questions of humanities and social sciences in general (although as seen, the book also refers to the natural scientific stock-taking including its complexities, uncertainties, societal effects and interactions as well as the sustainability strategies – focused e.g. in the broad human-environment analysis by Scholz 2011). Consequently, the focus here is on the humanities (or human sciences) and not on the natural sciences. The term refers to disciplines such as law, philosophy, sociology, religious studies, political science, economics, cultural studies, history, ethnology, theology, psychology, educational sciences, etc. Others speak of social sciences or cultural sciences.

1.2 Sustainability, Climate, and Other Ecological Issues Caused by Fossil Fuels and Livestock Farming: An Alleged Success Story Measured Against Global Environmental Goals

The political, legal and moral order of Western states has enabled most citizens living there to enjoy a historically unique degree of freedom and prosperity (despite all the differentiations still to be discussed). Because of its focus on freedom and democracy, the basic concept of this order can also be summarized under the term liberalism, named after the main stream of Western philosophy since the Enlightenment (this is meant neither party-politically nor as narrowed down to economic freedom, market faith or even neoliberalism). Intertemporal and global, however, there are blind spots. A spatial limitation can be seen in that, despite globalised free trade, wealth has so far only reached most inhabitants of the industrialised countries and the upper classes in the emerging countries (see also De-Shalit 2005; Gough 2017). In terms of time, young and future people are at risk of inheriting vital resources such as water, fertile soils, phosphorus or even biodiversity, especially at the expense of already poor people. In terms of space and time, the main victims and causes of global resource and sink problems are often not identical.

The Risks of Climate Change – Why Fossil Fuels and Livestock Farming Are the Core Issues for Most Environmental Challenges

In particular, anthropogenic global climate change is increasingly recognized as a huge challenge. At its core, it is triggered by the intensive use of fossil fuels in areas such as electricity supply, building heat, mobility, plastics or agriculture. Greenhouse gases often remain in the atmosphere for decades or even centuries and hinder the reflection of the solar heat from the earth surface. The fundamental scientific reality of this phenomenon is considered safe, also thanks to the high degree of networking of the entire global natural and economic climate research in the Intergovernmental Panel on Climate Change (see e.g. IPCC 2014), which has been based at the UN since 1988. Overall, the scientific global climate council IPCC (Intergovernmental Panel on Climate Change) attributes about three-quarters of man-made climate impacts to carbon dioxide, almost exclusively from fossil fuels (for electricity, heat, fuel and material uses) and land use, with the remaining gases such as methane and nitrous oxide also largely linked to land use and especially to livestock farming (that will be discussed in detail in Chap. 4.9). Due to greenhouse gas emissions, global average temperature has already risen by around 1 degree Celsius in the last 100 years.

Almost as important as climate change is a series of resource and sink issues that partly contribute to climate change and are partly exacerbated by it. Like climate change, they are also (partially) based on the use of fossil fuels and very often also

on intensive livestock farming, such as disturbed nitrogen cycles, soil degradation, loss of ecosystems and biodiversity, and ocean acidification (see e.g. Global Environmental Outlook 2010; IPCC 2014; IPCC 2007; Enquête Commission 2013, pp. 368 et seq.; Crutzen and Waclawek 2015, pp. 9 et seq.; FAO 2012; IAASTD 2008; Hennig 2017; Gilbert 2009; Nkonya et al. 2016 Cordell et al. 2009a, b; Giljum and Hinterberger 2014, pp. 3 et seq.; Hansen 2007; Parry et al. 2009, pp. 1 et seq.; Hennig 2017, chapter 2.1.2; Leclère et al. 2014; Löfstedt 2014, pp. 1089 et seq.; Baumert et al. 2005; Biermann et al. 2009; Garrett 2009; ignored by Ganteför 2010). Livestock farming is so relevant, because it requires a multiple of calories as vegetable food because of animal feed, including all the consequences for climate, biodiversity, disturbed nitrogen cycles, water pollution, etc. – whereby food production occupies a large part of the world's land and accounts for around three quarters of food emissions (Stoll-Kleemann and O'Riordan 2014, pp. 34 et seq.; Ekardt et al. 2018a, b; Singer 2009; Hennig 2017).

It is not easy to make very precise statements about the further course of events, such as climate change, despite all the insights into the fundamental interrelationships. Factors such as uncertainty, high complexity and time scales that are difficult to grasp are characteristic of the climate (but also for biodiversity loss etc.). In addition, climate change is a delayed and initially invisible phenomenon in its consequential damage; global warming and its consequences, for example, follow an increasing atmospheric greenhouse gas concentration with a time lag. Uncertainties exist, for example, about the self-reinforcing effects of climate change once it has got under way. Certain dampening effects are already largely contained in the prognostic climate models. On the other hand, feedback effects that intensify climate change have probably not yet been sufficiently assessed in terms of model theory. This concerns for example, melting polar ice surfaces in turn reducing sun-reflecting surface, the effects of increased water vapour development due to warming, cloud formation, the development of oceans and marine fauna under changing climatic conditions, the release of greenhouse gas from thawing permafrost soils, the effects of climate-change-induced changes in land use, changes in flora and fauna in desert regions and effects on monsoon periods. Statements from climate research (such as that there is a high probability of achieving a global warming of 4 °C or more by the end of the twenty-first century) can therefore be described as rather cautious and conservative, since most of them do not take full account of these factors; and the IPCC only makes consensual, cautious statements anyway. Thus, the latest studies tend to predict a significantly faster global warming (data on the following is compiled by Ekardt et al. 2018a, b; Höhne et al. 2016).

Despite all the uncertainties, global warming on this scale threatens to have far-reaching and fatal consequences. Food and water scarcity, massively increasing natural disasters, migratory flows, wars and civil wars over dwindling resources and thus overall chaotic and irreversible conditions are keywords here. Historical experiences with phenomena such as huge migratory flows, globally changed harvests or the increase of wars and civil wars under massive and extensive changes of weather and natural areas are missing. Those experiences of how weather conditions and violent conflicts influence each other can therefore hardly grasp the

possible consequences of climate change in a meaningful manner. Climate change is thus threatening to become the key ecological, but at the same time social and economic catastrophe of the twenty-first century (Acworth et al. 2017; Hulme 2009; Gough 2017; Fücks 2013).

The Underestimated (and Extremely Ambitious) Article 2 of the Paris Climate Agreement: Against Overshoot, Low Probabilities, 2 Degrees, Geoengineering

Consequently, Article 2 para. 1 of the new global climate protection treaty, the Paris Agreement, prescribes a global warming limitation to well below 2 °C compared with the pre-industrial age and at the same time commits to pursue efforts to a limitation to 1.5 °C (more closely on the legal details and its legally binding character: Chap. 4.3). Since consequential damage by climate change is already occurring today, even the latter would still cause considerable damage.

Therefore, the still erroneously quoted formula of the “2-degree target” is dead (inaccurate e.g. Gough 2017, p. 13; in parts also Björn et al.). The new internationally binding limit of 1.5–1.8 degrees implies a complete phase-out of fossil fuels in two decades at the most (Ekardt et al. 2018a, b). Of course, there are also both more generous and, conversely, even stricter calculations; e.g. the IPCC (2018) calculates with three decades. However, these and other optimistic calculations depend (besides population and economic trends as well as reduction pathways) on an optimistic assessment of climate sensitivity and on a low percentage probability of 50–66% of achieving targets (compilation of the literature – also for the following – at Ekardt et al. 2018a, b; Höhne et al. 2016; Hehn 2015; also on the central role of fossils). It also plays a role whether the base year (correctly: see below in Chap. 4.3) includes the beginning of industrialisation in 1750 or (erroneously) emissions from 1880 onwards. In addition, many calculations only include carbon dioxide and not the other greenhouse gases. Furthermore, many calculations consider it possible that the temperature limit will be exceeded to later reduce more drastically also trusting in negative emission technologies like Carbon Capture and Storage (CCS) or geo-engineering that are critical from the technical point of view (Chap. 1.3). Also IPCC (2018) allows for a limited overshoot in its calculations.

All these aspects – low probability for meeting the target, late base year, incomplete counting of greenhouse gas emissions, overshoot and geo-engineering – are very critical also from the legal point of view – as well as the acceptance of a moderate probability for meeting the target. Given that Article 2 para. 1 PA and human rights establish an obligation to stay below the 1.5-degrees limit (see Chaps. 3.8 and 4.3 with regard to human rights and with regard to Article 2 para. 1 PA), it would be legally excluded to trust in the more generous calculations (that leave us more than roundabout two decades for reaching zero emissions). The IPCC 1.5-degree report delivered in autumn 2018 conflicts with that, because it is based on numerous individual studies with overly optimistic assumptions (see above) regarding the considered greenhouse gases, the base year, the target, climate sensitivity, overshoot,

negative emissions, and probability. Such assumptions can also explain the slightly contradictory information on the years remaining until zero emissions have to be achieved in the draft reports in circulation.

Misconceptions of the Climate Sceptics

All this applies even if individual climate sceptics – who are not recognised within the IPCC and often argue in conspiracy theory – insinuate that the IPCC is too pessimistic (see Lomborg 2007 as an example). Climate sceptics tend to exaggerate the degree of uncertainty and understate the predicted damage. For example, they ignore the fact that the IPCC is – as shown – still too moderate and, moreover, does not even include the most massive consequences of climate change, such as possible wars, in its cost calculations. Moreover, it regularly fails to realise that using finite fossil fuels alone and – even more so – the consequences this has would cause other major problems, even if the less dramatic climate forecasts may ultimately be correct. Furthermore, the “climate-sceptic” side usually neglects the precautionary idea: If a drastic threat to very important normative goods can be anticipated, while knowing that once it materialises, it will not be remedied anymore, there is a clear obligation to act immediately. The obligation to act, however, is a normative idea; it presupposes that there are normative concerns which deserve a defence (see Chap. 3). And of course, all this does not mean that scientific climate research should not be questioned and criticised, as has already been made clear above.

The combination of climate change with fossil fuels, food and water scarcity, but also ocean acidification, soil degradation, nitrogen cycles, biodiversity loss and air pollutants (via global warming and via the impacts of agriculture in particular) shows the strong link between various resource and sink problems that share similar causes and tend to intensify each other (Hennig 2017; Secretariat of the Convention on Biological Diversity 2010; Ekardt 2016). The problems mentioned above already exist at the outset independently of climate change: fossil fuels, for example, are necessarily finite as a non-renewable resource (in human time periods). And ecosystems, soil fertility and water supply are also under increasingly massive pressure due to a growing world population, a rising standard of living and intensive farming practices in modern agriculture with the consequences of extensive soil degradation, increasing pollutant accumulation in soils, etc., which is exacerbated by climate change (on the “planetary boundaries” Rockström et al. 2009; Enquête Commission 2013, pp. 407 et seq.; EEAC 2014; IAASTD 2008). Especially climate change and biodiversity loss reinforce each other, and the storage capacity for greenhouse gases (GHG) of vegetation has drastically declined over the past decades. This does not rule out the possibility of conflicts arising between climate protection and nature conservation. The driving force behind various developments is very often fossil fuels; they also play a central role in agriculture, for example for mineral fertilizers and large machines.

The fact that all this is assuming such proportions and global scale is unprecedented historically, even though there have always been “resource problems”

(Diamond 2005; skewed at Hulme 2009). However, a holistic history also includes the fact that fossil fuels were an essential source of the modern freedom and prosperity stated at the beginning of this section. The steam engine and then the conversion of fossil fuels into electricity made it possible to produce much more than in earlier times. This and the use of fossil fuels for machinery and mineral fertilizers, also in agriculture, made massive population growth possible. In addition, completely new, much faster forms of transport, more comfortable forms of living and much more were created. The modern use of fossil fuels has thus set in motion an economic development that has made human life in many respects more pleasant, healthier and simply longer: Modern obstetrics, vaccinations, antibiotics and many other precautions against life risks would have been unthinkable without the energy revolution since early modern times. Conflicts of distribution between the poor and the rich have also been put into perspective over the past 200 years due to rising prosperity; and peace and freedom have thus certainly been promoted (Deaton 2013; Acemoglu and Robinson 2012; Fücks 2013). However, in some cases this does not apply to global cross-border relations, including extraterritorial procurement of resources.

Zero Fossil Fuels and Less Livestock Farming: Why Not Even the EU and Germany Are Successful

With the demand for a shift away from fossil fuels (and a reduction of livestock farming), the occidentally based, increasingly global model of civilisation, which in the last 200 years has been largely based on a high consumption of fossil fuels, is being put to the test. In that model of civilisation, fossil fuels are omnipresent, not only in electricity. They can also be found in heat and mobility, in fertilizers, in almost every product, in plastics, textiles, medical products, cosmetics or in the transport of goods. This puts pressure on daily car journeys, regular long-distance holidays or a high consumption of animal food products.

Despite this unfavorable overall situation, the EU and Western states in general have the idea that they are a kind of global climate and environmental role model that the Global South will preferably follow one day (e.g. Enquête Commission 2013, p. 497). However, this is neither true in absolute terms nor in terms of the development trend in Germany and Europe (Becker and Richter 2015; Schmidt-Bleek 2014; Moreno et al. 2015; Löfstedt 2014; Gough 2017; Chancel and Piketty 2015; Ekardt 2016). Global greenhouse gas emissions have risen by around two thirds since 1990, and also the demand for fossil energy continues to rise. Germany and the EU are stagnating at high per-capita emissions and far from zero emissions within the meaning of Article 2 para. 1 of the Paris Agreement. The EU is undoubtedly a leader in terms of discussions, technical climate protection options and a mass of legislative acts. However, at the bottom line, the concrete emissions are what counts. And these are far from conditions that would be compatible if they were to be continued in the long term and possibly copied globally by emerging countries.

In relative terms, too, emissions have by no means decreased by about a quarter in a country like Germany and by a similar amount in the EU since 1990 as is stated in official statistics – if arithmetical tricks are removed (also critical in this respect Becker and Richter 2015; Gough 2017; Chancel and Piketty 2015; Ekardt 2016). For instance, Germany’s official greenhouse gas balance – although it has actually been stagnating for years – appears to show this reduction. However, in the “Germany as role model” thesis, the approximately 12 to 14% drop in emissions that occurred in Germany due to the reunification-induced collapse of the GDR industry is embezzled. It also ignores the fact that many emissions have been shifted abroad since 1990: For the EU as a whole, these shift effects have been far greater than the statistical reduction in emissions since 1990: specifically in a calculation up to 2008 based on the emission reduction of around 10% at that time (on this phenomenon, which was difficult to calculate precisely, Peters et al. 2011; Hoffmann 2015; Becker and Richter 2015, pp. 3 et seq.; Schmidt-Bleek 2014, pp. 80 et seq.; Gough 2017; Chancel and Piketty 2015). In a globalised economy, the emission-intensive production steps are increasingly taking place in the emerging countries, even if the goods and services produced are still consumed by German or other European consumers. Sometimes consumer emissions are actually reduced, but at the price of even greater manufacturing emissions, often in other countries (Schmidt-Bleek 2014). However, such a spatial or sectoral shift does not help the climate (for more information on shifting or displacement effects, see Chap. 4.4).

This criticism is not a plea for the abolition of the principle of territoriality under international law in emissions calculations, because the above-mentioned estimates of trade flows and their implicit emissions show arithmetical uncertainties in detail. Nevertheless, for the subsequent normative analysis of climate targets and distributional issues, this already indicates that a state of affairs that cannot be sustained in the long term might exist here. Even in their supposed fields of success – in combating some air and water pollutants – European and German environmental policy to date has achieved less than expected. Firstly, there are still massive problems with reducing emissions domestically, and secondly, even reduced problems have once again been shifted rather than solved. This is typically ignored in the current discussion about environmental pioneers.

Other calculation loopholes are also opening up. According to international climate law, for example, the industrialised countries do not have to fulfil their already small reduction obligations at home, but can take account of climate-protection activities in the Global South that they finance (Chap. 4.3). However, the calculations of the alleged emission reductions abroad are subject to suspicion of considerable fining (Exner 2016; Schneider et al. 2010; Sutter and Parreño 2007; on the CDM in Chap. 4.5).

Even if climate change is mostly used as an example in the following: The other sustainability challenges mentioned, which are also often driven by fossil fuels, do not look any better. Here, too, important global environmental goals are missed. Under the UN Convention on Biological Diversity (CBD), for example, far-reaching targets for halting and reversing trends in biodiversity losses have been agreed that have not been achieved (more details in Chap. 4.10). Further facts and standards on

land-use-related environmental problems will follow later (Chaps. 4.9 and 4.10), and also the scope of normative objectives such as those arising from the Paris Agreement (Chap. 4.3) and ultimately for ethical and human rights reasons (Chap. 3) will be discussed in detail.

Uncertainty, Risk, Scenarios – Really the Core of the Sustainability Discourse?

Of course, no one knows the future in advance. And even today, after some decades of research, especially the exact course of the various global environmental problems in particular is uncertain, as mentioned above with regard to the climate sceptics. This is also true e.g. regarding the issues of a post-growth society. This brings us to some general findings about facts and their assessment in the sustainability discourse.

It is a commonplace that empirical uncertainties are characteristic for sustainability issues, if not for modern societies as such (Beck 1986; Scholz 2011; Ekaradt 2016). This already results from the high scientific complexity of many environmental problems, as has been or will be illustrated in particular by the examples of climate change, biodiversity and various other land-use-related problems (see also Marotzke 2015; Leclère et al. 2014; Ekaradt et al. 2015a, b, c, d). But as we will see in the following, from a point of view of human sciences, too, there are uncertainties about the specifics of facts. This is true for example with regard to the complex interrelationships of the economic system – up to and including population development or possible post-growth consequences of a determined sustainability policy (Chap. 1.4) – or the complexity of the motives of human behaviour (Chap. 2). This uncertainty is not about the triviality that subjective perception of risk varies (Hulme 2009; Lohmann 2010), but about the fact that it is actually uncertain how probable certain events and the possible extent of damages are, which economic reactions and investments take place in connection with the fact that one may simply not grasp the consequences which a single measure might trigger via complex cause-effect relationships, etc. This is especially true for unprecedented political instruments that have to be used to address the unprecedented challenges we face in terms of sustainability (Chap. 4). Forecasts in particular thus face serious problems.

Uncertainty makes the quantitative work with environmental data extremely complicated to say the least. All the more, working with complex scenarios in order to illustrate possible futures integrating a large number of issues can therefore be problematic. Although it is self-evident that scenarios are only as good or bad as their underlying assumptions – which are rarely transparent, inevitably incomplete in essential respects (due to overcomplexity), and (since it is simply a question of the future) at times simply wrong – they are often taken as a factual description or even as normative guideline. Rather, they are stimulating games of thought that should not be overestimated in politics, media, or science. The same is sometimes true for attempts to map the complex interdependencies of environmental problems and the manifold implications of a product or an energy source in so-called life

cycle assessments or ecological footprints. Furthermore, the common tendency towards quantification faces the problem that the underlying epistemology – philosophical empiricism who sees quantification as necessary precondition of science – shows serious flaws (Chaps. 1.6, 1.7, 3.1 and 3.9, discussed also with regard to experimental methodology and cost-benefit analysis). This is why this book avoids to rely too much on quantitative calculations (see also Ekardt 2019 in depth on sustainability and figures; too optimistic Scholz 2011; on the historical genesis Moreno et al. 2015). However, we have already seen that uncertainty may not take us to omitting political action due to the precautionary idea (in detail to the normative sphere in Chap. 3).

This chapter showed the extreme challenge in terms of sustainability and especially climate change, given the very high level of ambition in Article 2 Paris Agreement. It also showed that the EU is no real role-model by now; that overcoming fossil fuels and livestock overproduction would be core strategies for several sustainability issues; and that quantification should not be overdone. In the following, before focusing on any of the three focal points of this book – normative frameworks, preconditions of societal transformation, policy instruments – foundations have to be laid. Chapter 1 (in addition to crucial methodological, epistemological and definitional clarifications) will therefore ask questions about what a strategy for substantially more sustainability might look like in general – and which totally changed form of economic activity this would possibly mean. Once this has been clarified, the above-mentioned focal points of the investigation can be considered.

1.3 Sustainability Strategies: Purely Technical Through Consistency, Efficiency and Wonder Technologies – Or also Through Frugality?

There are different strategies for sustainability. More resource efficiency is conceivable, i.e. more economical use in relation to a certain result. It is also possible to switch to (not necessarily “inexhaustible”) renewable resources or environmentally compatible alternatives or a stronger recycling, however difficult this could be (consistency). However, frugality (or sufficiency) is also conceivable beyond these strategies of technological change. Frugality is understood here as behavioural change with the aim of more frugal consumption, may these changes occur voluntarily or in some other way. This means reduced, shared, extended or modified use of certain products and services. In a nutshell: efficiency and consistency mean that the same degree of consumption is still possible, only in a technically more clever way. Frugality, on the other hand, means consuming less instead of consuming smarter. Overlaps and unclear boundaries between efficiency and frugality may occur, for example when switching from passenger cars to public transport (von Bredow 2013, pp. 66 et seq.; Fischer et al. 2013, p. 10; Ekardt 2016).

Typical Sustainability Strategies: Consistency and Efficiency – Why Nuclear Energy, CCS, and Geoengineering Will Not Work

The central option for turning away from fossil fuels and their many negative environmental impacts is renewable energies as a consistency option, i.e. energies from non-fossil energy sources such as wind, sun, geothermal energy, hydropower and biomass. In addition to the absence of greenhouse gases, renewable energies stand for a secure long-term energy supply (due to their renewable character) when fossil fuels run out. In many Western countries, renewable energies currently represent an increasing share of the electricity mix, alongside fossil fuels and nuclear energy. The share of renewables in heat and fuels is considerably lower, so that so far only a small part of the total energy used is generated from renewable energies. Renewable energies are relevant for electricity, heat and transport, but at least partially also for the replacement of material uses of fossil fuels, such as plastics.

There are some specific aspects of bioenergy (Hennig 2017; Ekardt and von Bredow 2010; OECD 2008). Ideally, bioenergy, like other renewable energies, is climate-neutral; in reality, however, it generates greenhouse gases itself due to processing (and sometimes through its origin e.g. in rainforest areas). Moreover, biomass provides relatively little energy per plant. It also reinforces the existing problems of conventional agriculture regarding biodiversity loss, soil degradation, water pollution or disturbed nitrogen cycles (Chap. 4.9). In addition, imports from developing countries exacerbate problems with food security. In addition, bioenergy for the North, cultivated on high-yield tropical soils, competes with traditional biomass use in the countries of the Global South, for example as building material. Nevertheless, bioenergy seems sometimes attractive since it is always available, unlike wind and solar energy. But this will gradually change (see Chap. 4.10) via options such as new power lines, storage facilities and power-to-X (see Bösch et al. 2012). Power-to-X is particularly important because it can be used to convert wind and solar power into a material form – and this is a great advantage in industrial processes and mobility. Nevertheless, bioenergy may be produced safely at least from residues.

Besides renewable energies and resources, it is also important to increase energy and resource efficiency, i.e. the provision of energy services with a lower use of primary energy (which should not be confused with the efficiency of governance theory in the sense of the costs of a given instrument in relation to a given goal – or with broad efficiency in the sense of the general idea of balancing: Chap. 3.8). This concerns, for example, the generation and transport of energy via the electricity and gas grids, but above all the use of electricity, heat and fuels in production and use of all kinds of products (consumer electronics, household appliances, cars, foodstuffs, etc.), with buildings being the biggest example. More efficient use of other resources such as metals, for example for the production of wind turbines or vehicles, is even directly beneficial for the energy and climate problem. Because, if fewer metals are used, energy consumption in production is often reduced (von Weizsäcker et al. 2010).

Some will argue, however, that the demand for renewable energies and greater energy efficiency is premature; according to this view, no (or no complete) departure from fossil fuels is necessary for a change in energy and climate, as coal can also be used without greenhouse gases and, moreover, uranium or nuclear energy would be available – and thus even better consistency strategies would be available. No (or no complete) departure from fossil fuels is necessary for a change in energy and climate, as coal can also be used without emitting greenhouse gases and, moreover, uranium or nuclear energy would be available – and thus even better consistency strategies would be available. In particular, uranium – in the sense of no fossil fuel, of course – is climate-friendly if mining and processing is conducted accordingly, and coal could also become so through new technology. However, (for the following Schellnhuber 2015; Ekardt 2016) fossil fuels (except for uranium) remain not only greenhouse-gas-intensive, but also finite energy sources, no matter whether new sources are currently being discovered. Another problem is that of the risks of accidents and environmental damage associated with the extraction of fossil fuels. This problem is currently being further intensified by increasingly risky mining techniques, for example for unconventional gas (extracted by fracking) that is less concentrated in rock strata. In the case of nuclear energy, there is also the unresolved (and extremely expensive) issue of final disposal, environmental risks of radiation and accidents, and even more the risks of targeted terrorist attacks in the style of September 11, 2001. In addition, the market share of nuclear power plants is usually overrated. If electricity, heat and fuel are combined, uranium only accounts for around 3% of the current global energy mix. Furthermore, uranium, just like large coal-fired power plants, is not suitable for combined heat and power generation because the waste heat from electricity generation can only be generated with a small-scale technology that is close to settlement. As a result, nuclear power plants (and large coal-fired power plants) are by design an option for electricity only, but not for heat and fuel, and are therefore quite limited in their application. The economic balance of these old energy sources (not to be confused with the balance at company level) is also far less favourable than sometimes assumed, just as it is by no means indispensable for security of supply, e.g. for electricity (Chaps. 1.4 and 4.10). However, there are also some environmental problems with the use of renewable energies as well, especially with regard to bioenergy (see in detail Hennig 2017; Ekardt and von Bredow 2010; OECD 2008; Haberl and Erb 2006; Nonhebel 2004; Rosillo et al. 2007; Romppanen 2012). For this very reason efficiency is of supplementary importance.

Many see the emissions of greenhouse gases as the key problems of fossil fuels, even if this does not apply to uranium. Could carbon dioxide not be captured and stored in deep layers of the earth (Carbon Capture and Storage/CCS) in the future? Elsewhere, CCS has been examined in detail (for the following with a literature review Ekardt et al. 2011a, b) – the use of CCS technology could make it possible to at least largely reduce carbon dioxide emissions from power plants and thus, in the interest of security of supply, to preserve the energy source coal, combined with prospects for innovation and jobs, if necessary. However, the high energy consumption for capturing the greenhouse gas, which at the same time impairs the

energy efficiency of coal-fired power plants, is a criticism of the technology. In addition, the geological storage potential in many countries such as Germany is limited. Other environmental problems should also be noted, such as an increase of 90% in water consumption, an increase in the generation of toxic waste and aggravated local environmental problems such as the destruction of habitats and air pollution. If there is even an accidental sudden escape of stored greenhouse gases, there is a risk of suffocation for living organisms, acidification of drinking water deposits and negative effects on flora and fauna. Above all, however, it is still largely uncertain whether CCS will ever function on a large technical scale and with no or only minimal leakage rate. In the entire CCS process chain – separation, transport and deposition – CO₂ could escape, namely about a quarter of the separated emissions. CCS is also still very expensive. The combination of bioenergy and CCS – with the goal of negative emissions – is also a rather dubious option in view of the then imminent massive potentiation of the problems of bioenergy, which are, as already mentioned, still to be discussed, and the worldwide lack of land (prematurely therefore Edenhofer et al. 2015, pp. 69 et seq.; Anderson 2015, pp. 898 et seq.; correct Moreno et al. 2015, p. 19 and passim; Hennig 2017). CCS thus appears primarily as an option when separated gases are not going to be stored, but are further used industrially. In this respect, there are great uncertainties in terms of costs and technology. Carbon dioxide from carbon capture could rather be used technically, which seems difficult at the moment in these quantities and at feasible costs.

According to the current state of knowledge, miracle technologies qualify even less as candidate for technical problem solving. Gigantic global afforestation activities, for example, would cause more problems than solutions to various environmental issues, even if they can make a small contribution (more detailed Chap. 4.9). Another doubtful candidate is nuclear fusion – greenhouse-gas-free and less risky than nuclear fission – which is intended to provide very large amounts of energy but has remained an idea for almost 100 years without any sign that it might actually work (Schellnhuber 2015). The idea of geo-engineering (critically Moreno et al. 2015; Schellnhuber 2015; Ekardt et al. 2018a, b), which is also being discussed, includes technologies that intervene extensively in geological, biological, geochemical or biogeochemical conditions and cycles in order to influence undesirable effects such as changes in climate (e.g. sea fertilization with iron to increase algae growth, influencing cloud formation with the help of sulphur particles or sprayed sea water, installation of large-area solar sails in space). Similar to CCS, however, there are potentially massive risks, e.g. sudden strong global warming, if the greenhouse gases bound by algae in the ocean are suddenly released in a short time or the initiation of long-term damaging and possibly irreversible processes takes place through highly complex interactions with other ecosystemic factors, which are hardly researched and difficult to oversee. Furthermore, there is great uncertainty about the functioning of corresponding technologies and probably high costs. Furthermore, the other environmental problems caused by fossil fuels such as disturbed nitrogen cycles, biodiversity loss etc. remain probably unsolved in geo-engineering.

The Need for Frugality in Addition to Technological Strategies

But even the promising technical sustainability strategies (consistency and efficiency) are limited. Ultimately, a successful sustainability transition could require not only better technology (renewable energies, energy efficiency) but also frugality, even in climate protection, where mature technical options are available. Of course, future technological developments and their ability to solve existing problems can never be predicted with certainty, as has already become clear with CCS. Of course, nobody has a crystal ball, so that a purely technical solution to the energy and climate problem cannot be completely excluded (and also the many complicated future predictions and energy scenarios do not change this, because they work on the basis of thousands of assumptions, the correctness of which can be widely discussed; see Chap. 1.2 and Ekardt et al. 2018a, b; this is why this book avoids to focus too much on quantitative calculations). And it seems attractive for many reasons to solve environmental problems such as climate change purely technically. In short, new technology can be sold and creates jobs (see Chap. 1.4 for more information on economic effects), whereas behavioural change implies removing goods from the market and thus ultimately calling into question the economic model geared to growth in general. In addition, a purely technical change can be more convenient and therefore easier to implement than behavioural change (Chap. 2.3).

For all these reasons and because – if one does not want to bury modern obstetrics etc. with modern technology – modern technology can hardly be outright rejected; technology for solving sustainability issues is an essential starting point (one-sided therefore Paech 2012; Sommer and Welzer 2014; for the purely technical approach Schmidt-Bleek 2014). Nevertheless, there are some indications that a purely (!) technical sustainability turnaround would fail and therefore frugality proportions will also be necessary. This already applies to climate change, but even more so when other environmental problems are included (for individual or several of the following points Jackson 2009; Ekardt et al. 2015a, b, c, d, pp. 15 and 27 et seq.; Stengel 2011, p. 131 et seq.; Hoffmann, Growth, pp. 12 et seq.; Becker and Richter 2015, pp. 3 et seq.; Stoll-Kleemann and O’Riordan 2014, pp. 34 et seq.):

- The first reason is the scale of the problem, for example with climate change. Measured against the rates of innovation known to date, it does not appear very likely that a change to renewable energies and energy efficiency alone in one to two decades (Chap. 1.2) can achieve zero emissions, as would be necessary for the emissions budget to achieve a global 1.8- or 1.5-degree temperature limit in accordance with Article 2 para. 1 Paris Agreement, and later also prove to be required under human rights law (Chap. 3.8). Seemingly more optimistic assessments (Stern 2006; Sinn 2008) are largely explained by the omissions discussed in Chap. 1.2, e.g. that the legally binding objective of Article 2 para. 1 Paris Agreement and its radical ambitiousness are not taken as a basis. It is obvious that a zero-emissions target would imply to keep residual emissions, for example in land use, to a minimum and to compensate for them by (comparatively

unproblematic) measures in wetlands or forests or generally for soils. It should be noted that the scale of the problem calls for a global perspective, i.e. to what extent the consumer wishes of a world society oriented towards economic growth and rising prosperity can be satisfied purely technically or not. New resource discoveries can only postpone this problem; in the case of fossil fuels, they even exacerbate it.

- It should also be kept in mind that the problem of shifting emissions, land use, etc. to other countries (Chap. 1.2) is hardly sustainable and must also be ended in normative terms (Chaps. 3.9 and 4.7).
- The foreseeable lack of technical solutions in certain sectors, for example in the area of food, is also essential. The mass of emissions generated there is due to animal food, since the detour from animal feed via calories to humans triggers a multiple of plant production (for animal feed) and thus a multiple of the use of fertilizers, land cultivation and other emission factors, such as the methane flatulence of cows. This can be countered by eating less animal food. However, this would not be a technical measure, but a change in behaviour. It has already been mentioned that – as an alleged counterproposal – one cannot simply hope for high compensation for emissions, but that moors, forests and soils only give something like this to a limited extent (and that this is then rather the residual emissions that remain even with a different diet; more detailed Chap. 4.9).
- Even renewable energy and efficiency options are not infinitely available (also independently of the mentioned problems particularly of bioenergy). Even if energy sources were infinitely available, limitations result from the fact that other resources, without which one can do little with energy, are finite in a physically finite world. For example, rare earths for the production of wind power plants, flat screens or electric car batteries. The extent of the environmental impact of a product is often only recorded very incompletely by a pure energy focus.
- Perhaps the most important point is that, in addition to climate change, other environmental problems need to be solved in the longer term as well which are just as existential (and economically relevant and in order to maintain world peace). Regarding the other environmental issues, technical solutions are clearly less promising than in terms of climate change. Key examples of this are the damaged ecosystems with biodiversity loss, the disturbed nitrogen cycles and soil degradation (more precisely Chap. 4.9). The key to solutions here is that humankind withdraws more strongly from the land, curbs agricultural production and leaves more space for nature. This initially implies an end to ever larger living areas and steadily rising animal food consumption rates for rich industrialised countries; likewise, lower yields per hectare must not be offset by ever greater land use, etc., due to the elimination of fossil-based mineral fertilizers (at least of their nitrogen component). The fact that especially in the area of land use the hope for eternal efficiency increases and alleged miracle technologies has little substance is once again taken up in more detail (Chap. 4.9). Also, the material basis of all goods and services of modern prosperity – continuing to grow

and spread globally – will hardly be an option to renewable (competing with food production) or virtually inexhaustible resources.

- The following point is even more dominant in the debate: So far, purely technical improvements do not tend to result in energy savings despite the efficiency increases achieved. This is because at the same time the respective product is bought more frequently or is used more intensively. More efficient cars, for example, are contributing to the statistical trend of driving longer distances overall, and there is simply an ever-increasing number of cars, which ultimately does not reduce emissions. Lastly, technical innovations do not prevent the growing prosperity from consuming the emission savings – or from merely relocating to other areas of life. It is obvious that an effective sustainability policy must avoid this problem (in detail on rebound and shifting effects Chap. 4.4). However, the problem described is only proof of an imperatively necessary frugality if one assumes that technical progress cannot be fast enough to surpass these effects to the necessary extent – or that the capital seeking investment will then inevitably overuse other resources (then efficiency is simply expansion). This brings us back to the reasons from the prior bullet points.
- Even if all the points mentioned were not true and it were indeed possible to get both climate and other environmental problems under control by purely technical means (and therefore with sustained growth), one probably unsolvable problem would remain in the end. This is that with ever continuing growth the technical options would also (!) have to ever become better. Not only today's energy and resource consumption has to be covered. Finally, this endless spiral may collide with the physical finiteness of the world at some point – not so much the “if” as the “when” seems questionable in this respect.

The Myths of Decoupling and the Kuznets Curve

Against this overall background, a so-called decoupling of growing prosperity and resource consumption is certainly feasible and can already be observed today due to technical improvements, but this is probably not sufficient – as is already diagnosed in the literature without reference to the very drastic 1,5 degrees limit (Hoffmann 2015, pp. 12 et seq.; Santarius 2015; Jackson 2009; Heyen et al. 2013, p. 8; Becker and Richter 2015, pp. 3 et seq.; Paech 2012; Voget-Kleschin 2013, pp. 97 et seq.; Alexander 2012; dismissed by Handrich et al. 2015, p. 27; the following is ignored e.g. by Schmidt et al. 2016). With regard, e.g., to climate change, it is simply a matter of rapid zero emissions and not merely the task of stabilising or slightly reducing emissions as prosperity increases. The belief in decoupling, also known to economists as the Kuznets curve, was not even true at its time of origin, the early twentieth century, and even Kuznets was aware of the relative arbitrariness of his

calculations at that time, especially if one includes the shifts in emissions to other places (Piketty 2014; Moreno et al. 2015, p. 28). *Nota bene*: We are talking about drastically reduced emissions, and it is not just about shifting problems. The discourse on decoupling largely ignores this.

Of course, it is not only the future in general that cannot be predicted with certainty, but technical progress in particular, especially in view of the limits of human knowledge. Furthermore, developments of environmental problems, not only climate change, are subject to considerable uncertainty. In normative terms, too, the extent of action required can be discussed in detail, although objectives such as far-reaching reductions in greenhouse gas emissions, stabilisation of ecosystems, halting soil degradation, etc. can certainly be justified both legally and ethically (Chap. 4.9). *Therefore, this chapter showed on the basis of all aspects presented, behavioural changes or frugality will probably have to play an important role. And this does not mean that we have to talk about the social conditions for the implementation of new technologies – it rather means that, in addition to “smart consumption”, “less consumption” also has to occur.* The necessary amount of frugality cannot be determined precisely because no one has a crystal ball that tells you about future technological developments and many other future developments. However, the longer we wait with the change, the more drastically the frugality portion will have to be precipitated.

Whether e.g. climate protection (or sustainability in general) is necessary on this scale, is, of course, an ethical and legal question. This is examined in detail in this book. It remains true that fossil energies can in principle be replaced by renewable energies (Jacobson and Delucchi 2011; Schellnhuber 2015; Ekarde et al. 2015a, b, c, d). With regard to all of this, it should be avoided talking about a “need” (e.g. World Energy Outlook 2015) for energy or other resources. Instead, we should speak value-free of demand. Need suggests a normative authority that cannot be presented as an alleged fact and for which there are also more appropriate terms.

1.4 Sustainability, Profitability, Population Growth, Involuntary Transition to a Post-growth Society – And the Difficult Consequences

The questions of climate change and resources are also fundamental economic questions in a physically finite world. In other words, the question of sustainability strategy has potentially massive economic consequences. These issues, including the question of post-growth, will be discussed in this chapter.

Sustainability, Profitability, and the Social Costs of Fossil Fuels

It is rarely disputed that e.g. renewable energies and energy efficiency are an obvious alternative to fossil fuels in terms of reducing greenhouse gases and conserving resources. However, it is often feared that these approaches are economically questionable. However, even in the medium term, i.e. without taking into account the long-term threat of climate damage, these approaches are in principle advantageous from an economic point of view when offsetting all effects, or at least not disadvantageous, even if one takes into account the necessary expansion of the electricity grid etc. and the considerable difficulties of the calculation (Shindell 2015; Machol and Rizk 2013; Jakob and Edenhofer 2014; Ismer 2014, pp. 65 et seq.; on the high economic costs of coal also COM(2014), 634 final). It should be pointed out again that such calculations are not very precise, if only because the investments shifted towards investments in sustainable sectors are also relevant elsewhere, and the exact costs of new technologies are also difficult to predict. It is also decisive which factors – e.g. possible climate wars – are even taken into consideration (Parry et al. 2009). However, the above applies even if such calculations are limited to factors that easily have a market price and thus to what calculations can do.

Beyond avoiding future energy price spirals, new technologies such as renewable energy resources and energy efficiency can create jobs and markets (more than large power plants; see references above). Even more emphatically, the economy profits from climate protection in the long term, if only because of the climate damage avoided. Climate change with crop failures, natural disasters, floods, areas and entire countries becoming uninhabitable or even huge migratory flows would, according to estimates by economists, be many times more expensive than effective climate protection measures. These economic calculations, of which the much-discussed report by Nicholas Stern at the end of 2006 is the most famous, are calculated quite conservatively, even if Stern underestimated the costs of new technologies in part (Shindell 2015, pp. 313 et seq.; Machol and Rizk 2013; IMF 2015; Stern 2006; Stern 2009; critical on the debate Burtraw and Sterner 2009; Nordhaus 2008; Byatt et al. 2006; on earlier calculations Broome 1991; the rather cautious character of the Stern calculations is not refuted by the low discount rate, because a higher one would not be convincing; see Chap. 3.9). For example, the costs of possible climate wars over oil, water and other resources are essentially not included in the calculations. And resource wars not only cost a lot of money – after all, conflicts in Africa and the Middle East are already tending to be caused in part by increased drought (and by Western hunger for oil). For instance, in calculations such as Stern's climate change processes such as a partially erupting Gulf Stream, which are less certain, but nevertheless conceivable, are not included.

Beyond climate change, fossil fuels and nuclear energy also generate considerable economic costs; the health costs triggered by fossil energies are particularly important (Carolan 2015; Machol and Rizk 2013, pp. 75 et seq., which calculate an annual average three-digit billion-dollar amount in health costs (!) for the USA alone). It is also worth mentioning the many billions that have flowed and are still

flowing into researching traditional energy sources in various countries, forest damage, consequential damage to opencast lignite mines, such as groundwater or biodiversity, and the disposal of radioactive waste. Under no circumstances are all these costs borne by the energy companies, or the like. Instead, the general public co-finances the existing energy system through a large number of tax exemptions, tax reliefs, research subsidies and infrastructure services. Direct subsidies, which are still several times higher for fossil energies worldwide than for renewable energies, are not yet mentioned, although direct subsidies lag far behind the indirect subsidies that can be seen in the non-internalisation of the social damage caused (IMF 2015; Global Commission 2015, p. 9 and *passim*; World Energy Outlook 2015; Russell-Smith et al. 2015).

In addition, climate protection can often save companies energy costs in the short term – even without taking into account the overall social damage – for example regarding energy efficiency in buildings (through thermal insulation, boiler technology, window quality, etc.). Furthermore, an energy revolution is an essential component in order to still have electricity, heat and fuel permanently available at acceptable prices in the future. Fossil fuels are finite, so they are becoming scarcer and more expensive in perspective (although not up-to-date), especially since they make us dependent on unstable regions of the world where oil and gas occur, since for instance the EU currently obtains more than half of its energy from outside.

How Frugality May Take Us to Post-growth

Economic problems arise as soon as frugality comes into play alongside new technology. It is in tension with the politically influential idea of eternal economic growth worldwide and also in the occident. Growth and its safeguarding is seen by many as the central political and social goal, in the Western countries and worldwide. Greater well-being, stable welfare states, increased human happiness, increased freedom, job creation and much more are expected from it. In decades to come, the developing and emerging countries are also likely to fight the often dramatic poverty. This implies a kind of economic growth. At the same time, however, economic growth is a key driver of the climate and resource problems, with growth also increasing the consumption of fossil fuels, despite all the opportunities for green growth (including the ambivalence of Gough 2017). This is exactly the path the emerging countries are following. And at the same time – as seen – it is not enough to stabilise or slightly reduce e.g. climate emissions; what is needed are zero emissions in the near future.

Therefore, if frugality is an essential part of the sustainability transition, less will be sold (e.g. fewer holiday flights). This could, if it is significant, mean an unplanned transition to a post-growth society, meaning a society that is permanently without economic growth or even has to adapt to shrinking processes (Jackson 2009; Paech 2012; Alexander 2012; Schulz and Bailey 2014, pp. 277 et seq.; Scheidler 2015, pp. 205 et seq.). Certainly, one can also develop individual business ideas from the idea of frugality which have to do with starting points such as sharing, regional,

slow, service-orientation or especially educational measures and courses. This could enable individual companies to grow. In sum, however, real frugality would be precisely that, to put it bluntly, we would all buy less, instead of missing our environmental goals or shifting our problems to other countries. And from an economic point of view, this will probably not allow the growth-society of the past to continue in this way. Consequently, there are already companies today that deliberately decide against growth – and even more companies that exist without direct intention without growth. But this chapter is not about deliberately avoiding growth. The transition to a post-growth society could simply be the side-effect of a problem-adequate energy and climate policy, if this includes significant proportions of frugality.

Some people might think now: If frugality could lead to the end of the growth society, the transition in energy and climate change can hardly make as much economic sense, as was suggested above. But there is a misunderstanding here: A planned, step-by-step economic rethinking will most likely make more economic sense than a world of climate wars (even if nobody can definitely calculate this, because the various multi-causal interrelationships and effects simply become too complex). Exactly these effects are completely ignored in current calculations such as Stern (2006), as well as the ambitiousness of climate targets, which is why he misconceives climate protection as a mere “dip in growth”. Furthermore, frugality can just help to avoid certain social costs and conflicts that may have technical options (including wind energy). Moreover, as described above, it is probable, but not definitively clear whether frugality will really be necessary, even if there is a strong case for it (although Jakob and Edenhofer, Oxford Review of Economic Policy 2014, pp. 447 et seq. and Stern 2006 overlook the fact that the purely technical approach is not feasible if zero climate emissions are to be achieved, if the relocation of problems to other countries is to be stopped and if further environmental problems are to be solved at the same time; especially, the assumption seems wrong that someone plans to implement more frugality than necessary to supplement the technical options with regard to the achievement of climate targets).

If, in spite of all this, one imagines further growth in the long term and worldwide, explicitly or implicitly by avoiding the question, this implies purely technical measures of sustainability, which are only insufficient if one considers the frictions mentioned in the last chapter: extent of the problem, other environmental problems than just climate change, danger of overoptimistic technical expectations, rebound and shifting effects with ever-growing prosperity, etc. (insufficient therefore Stern 2009; Handrich et al. 2015, p. 27; Global Commission 2015, pp. 10 and 40 et seq.; Nordhaus 2008, pp. 32 et seq.; unilaterally also UNEP 2010; explicitly in the sense of the present presentation Helm 2008, pp. 24 et seq.). Thus, in terms of the extent of the problem, the voices just quoted do not adequately take into account the target horizon of the Paris Agreement as well as the possible damage caused by environmental problems. If the world is driven into increasing wars and civil wars, for example, this is likely to end the growth age relatively obviously, despite all the difficulties in quantifying in detail. No solution, however, is to postulate normatively that growth must be maintained in any case and, in return, considerable environmental

damage must be accepted, possibly named as “weak sustainability”; this stands in conflict not only with the Paris Agreement, but even more importantly with human rights guarantees, as will be examined in detail later (Chap. 3). To put it in a nutshell: growth in a finite world will almost inevitably reach its physical limits at some point, even if even NGOs often admit this only to a limited extent in order not to frighten supporters and donors (Paech 2012). If these limits are not respected, it is highly probable that the disasters predicted by the Club of Rome in 1972 will occur either in the environmental situation, in terms world food supply or in violent conflicts (the technical possibilities were underestimated by Meadows et al. 1972, but at the same time the environmental stability there was clearly overestimated). To cut a long story short: It is not a viable sustainability strategy to endlessly continue pushing products onto the market and then to green some rough excesses. Just because aircraft’s nozzles are designed to be relatively energy-efficient, the long-haul flight which would not have been undertaken in the past is not beneficial to the environment.

The Myth of Purely Qualitative Growth

Also, the hope that in the future simply “new ideas” will grow permanently and thus enable eternal (“qualitative”) growth despite drastically reduced consumption of resources, does not really eliminate the described problem situation with some probability. If the idea is to have an economic substance, it must be meant to go further into services rather than products. Simply ideas “in and by themselves”, on the other hand, would probably not be an economic good (and from a purely economic point of view, it does not help to simply develop a different concept of growth, i.e. to measure the increase in other goods not traded on the market, since this cannot then replace the economic function of growth, however interesting such concepts may be purely ideational; closer to this OECD 2015; Stiglitz et al. 2009; Enquête Commission 2013; Jakob and Edenhofer 2014). The failure of purely qualitative growth in the sense described in this way (even if still nobody owns a crystal ball) seems likely for several reasons (for the following Jackson 2009; Paech 2012; Gordon 2016; Ekardt 2016):

- Firstly, according to all experience to date, “ideas” in the form of services also lead to concrete material resources being consumed again: The constant climate emissions described above (in Chap. 1.2) exist, for instance, although at the same time the trend towards a service society is continuing. This does not come as a surprise: The internet, for example, may seem like an immaterial idea, but computers and servers also consume electricity and scarce finite resources for the production of various devices and the corresponding infrastructure. In addition, networking accelerates the economic cycles of material goods as well, just as networking increases travel activities and the like due to the increasing number of interaction partners. And also, a consultation or a massage are carried out in a

place, which is materially equipped, to which one moves further with material means etc.

- Secondly, it is at least unclear whether an economy that functions purely on an ideal basis and without a strong industrial base will actually generate long-term growth (Gordon 2016).
- Thirdly, the standard economic idea that human imagination and time are in a way infinite seems rather courageous, not to say megalomaniacal and unreal. And it is also unclear how many things (e.g. care, food, art, enjoyment of nature or health) can be improved to infinity. Or how about relationships (if they were economic goods), literature or simply wine: can all this become infinitely better, perhaps even exponentially in the case of a constant growth rate (given the compound interest problem)?
- Fourthly, the problem of exhaustive demand in Western countries is already making it increasingly difficult for companies to bring new services to customers, as can be seen from ever lower growth rates.
- Fifth, it seems doubtful whether it can generally be a good idea to set up the entire concept of life, economy and politics in practice on such a vague basis as “eternal qualitative growth” (or even on the general hope that something unexpected will always happen) – or whether it would then not be more appropriate to take a different path. This is again a normative point, and that is the one already mentioned against climate scepticism: the precautionary principle (Chap. 3.7).

The (Yet) Unresolved Consequences of Post-growth for Many Social Systems

The thus foreseeable finiteness of growth is a major problem, since so far, modern societies are often dependent on economic growth (Fücks 2013, pp. 120 et seq.; Herrmann 2015, pp. 239 et seq.; Sinn 2008; Jackson 2009). This requires solutions for areas of society that have so far been implicitly geared to growth, such as the labour market, public debt, the tax system, pension systems and banking. Notabene: It is about solutions both for the transition and for the imagined target state; the former is almost always forgotten. For example, if there is no long-term growth, the logic collapses that today’s national debt can be offset by rising tax revenues in the future. If one were to try to compensate for this by imposing high taxes on the rich, emigration or at least a shift in capital could be expected in the foreseeable future. According to current economic textbook opinion, capitalism consequently needs some form of growth. If saving were more attractive than investing, it would have an impact on the current labour markets and welfare states (Gough 2017 shows that allegedly simple solutions for that such as basic income are at least questionable; see also Ekardt 2016). Current developments such as globalisation, automation, artificial intelligence and digitisation – even if they could theoretically (without this being foreseeable) also be counteracted by legislation – reinforce these factors.

Therefore, the fact that the future does not belong to growth does not mean that post-growth would be problem-free. Despite a lack of clear answers to the problems raised above, post-growth, or even more pronounced degrowth, meaning shrinkage, is increasingly formulated even as an explicit normative goal (and not only as an unavoidable consequence of ecological limits) by a small post-growth movement, partly increased in the direction of explicit ideas of autarky, with all their empirical and normative questions of doubt (critically Ekardt et al. 2015a, b, c, d). The movement is partly (rather unknowingly) in the tradition of former civilisation-critical movements, such as the ancient apocalypticists, the early modern Anabaptists, the Wandervögel movement at the beginning of the twentieth century or the 1968 movement (Scheidler 2015; Ekardt 2001). Such movements often find some support, especially in progressive, wealthier social classes. Whether, however, the transformation of the growth problems into a normative idea of happiness and a genuine anti-capitalist revolution – and whether post-growth empirically promises more happiness – will prove doubtful below (see Chaps. 2.6 and 4.4). Furthermore, the hope (heard from trade union circles, for example) that the limits of growth could be reduced to a problem of distribution, and thus ultimately overcome, cannot be empirically brought into line with the drastic ecological goals. In short, frugality is not just about some super-rich people having to change their lives (Fücks 2013, pp. 122 f.; Herrmann 2015, pp. 65 et seq.); and also, the normative question of a socially just distribution of material goods is far less clear than some people might think (Chap. 4.4).

The Promises of Post-growth

Despite all this, the “threatening” end of growth for a number of reasons does not necessarily appear to be as fatal as is often assumed (Jackson 2009; Daly 1996; Jakob and Edenhofer 2014, pp. 447 et seq. – although degrowth fans such as Gough 2017, pp. 178 et seq. in ignoring Article 2 para. 1 PA may also latently fail to recognise the necessary extent of degrowth). The fact that the subsequent problems of post-growth and (!) the transition there is even more difficult does not mean that those problems are unsolvable. The problems of the end of growth are also partly those that would occur anyway, e.g. because at some point it will simply become more and more difficult to attract a demand for new products, in which a labour market is massively challenged by artificial intelligence, demographic change and robotisation etc. In times of globalisation, national politics is increasingly powerless. Processes such as public debt, demographic change (including Baer 2009) and ongoing technical rationalisation are forcing the government to reform pensions and the state budget even without regard to ecological problems. And historically, a growth society is a special case anyway, linked to the mass use of fossil fuels that began around 200 years ago. Furthermore, contrary to widespread hope, global growth rates say nothing about the actual distribution of wealth. In other respects, too, the concept of growth ignores many important points (Stiglitz et al. 2009; Enquête Commission 2013; Jakob and Edenhofer 2014; Fücks 2013; Muraca 2015). Private social work such as childcare,

for example; and the drastic long-term damage to the growth path currently considered to be without alternatives, for example in relation to climate change. On the other hand, wars and thus maximum human suffering could become visible as an increase in economic growth. Whether more prosperity makes people empirically happier is still being examined separately (Chap. 2.6).

Why Post-growth Is Still More Profitable Than the Catastrophic Consequences of Business-as-Usual – And Why Population Growth Is Not the Key Problem

The widespread objection that resource and climate protection, for example, costs money and yet also needs growth is not very convincing. Behind this assumption is the unspoken idea that environmental protection is simply a question of expensive pollutant filters (and this idea lives even in the mentioned speech about climate change as a mere dip in growth at Stern 2006 – as well as in the economic criticism on frugality as mentioned above). However, this fails to recognise that effective protection of livelihoods today is primarily a problem of resource-intensive lifestyles and economies (which does not exclude the possibility that very poor people may often handle resources such as forests inefficiently). It therefore remains the case that quantitative and qualitative growth are threatening to come to an end, despite temporarily necessary growth in developing countries and temporarily conceivable growth in innovation technology in the industrialised countries (in the wake of a possible sustainability policy).

The hope that the entire problem developed in this way will be resolved in such a way that only global population growth is seen as the cause of a lack of sustainability is also not convincing. Population growth, however much it is raised as an issue again and again, should come to a standstill with sufficient prosperity and then even turn into population shrinkage, as is the case today in the occident (Fücks 2013, p. 78). It is true that there would be no problem of non-sustainability if only a few million people lived on earth. However, the fact that the population in Africa, South Asia and South America is now growing is not a central cause of unsustainability, because the per-capita resource consumption, especially in Africa, is simply too low. However, a massive problem arises when they begin to imitate the Western lifestyle. In this respect, it is necessary to ask later how poverty in the countries mentioned can be combated, welfare state and education made possible, precisely so that population growth can probably be slowed down and the increasing prosperity can then be directed ecologically in a different direction, and thus also in the occident (Chap. 4.6).

We have seen so far: Measured against the ambitious global environmental targets, the industrialised countries in particular (but ultimately almost all countries in the world) still have a long way to go. And: In addition to technical approaches such as consistency and efficiency, a sustainability strategy to meet these global goals also requires frugality, i.e. changes in behaviour (whether voluntary or involuntary, will be discussed later). Such a path is still more economically sensible than the direct path to disaster, even if one realistically assumes that it will bring the growth society to its end, including considerable consequential problems.

1.5 Sustainability: A Definition Without Pillars

For some time now, the attempt to answer questions of the permanent and global practicability of contemporary lifestyles and economies has been concentrated in the concept of sustainability. Sustainability and sustainable development are increasingly understood, at least verbally, in politics, science and civil society as one – if not the – essential new guiding principle of modern politics. The term “sustainability” was originally coined at the beginning of the eighteenth century in the sense of permanently tenable conditions for forestry by Hans Carl von Carlowitz in the German state of Saxony. The idea was not to cut down more trees than grow back. However, sustainability has only become the central political concept up to a “topic of the century” since the late 1980s, when a comprehensive model was sought that would bring justice into the development crisis of the southern hemisphere and the environmental problems in the northern hemisphere. The most important stages of the debate marked the proclamation as a central policy goal at the United Nations level in 1987 by a prominent but purely advisory expert body (the Brundtland Commission), the Rio United Nations Conference on Environment and Development, its follow-up conference in Johannesburg in 2002 and the Rio + 20 conference in 2012 – up to the proclamation of the (non-binding) UN Sustainable Development Goals (SDGs) 2015 (on the SDGs see Kim and Bosselmann 2015). What is at stake in this chapter is a definition of sustainability (see for a detailed analysis Bosselmann 2016).

Definition Versus Content

Definitions, i.e. the linguistic designation of a subject matter, are ultimately arbitrary; they can be freely determined conventionally or individually (whereby the latter, as long as it goes beyond a moderate further development, regularly undermines the purpose of communication associated with language). Definitions are thus in contrast to observable and therefore not arbitrary contents. If I want, I can also call a piece of seating furniture “squirrel” instead of “chair” (= definition). It is not arbitrary, however, whether there is actually a piece of seating furniture in front of me, whether there is any seating at all, whether it is square or round, etc. (= content). That neither descriptive nor normative contents are arbitrary will be shown later in more detail, as well as the role of language as a factor (Chaps. 1.6 and 3). This book follows neither the style of logical positivism nor its extreme opponent, namely postmodern thinking that both (more or less) equate linguistic naming and content. This means that neither definitions are considered to be truthful nor terms and contents are equated and both are considered to be untruthful. Despite all the discussion about this, the author is not able to see how (however much language can be changed, cultural content can be conveyed, etc.) the world of thought can be understood meaningfully without that distinction. The following definitional analysis of sustainability has, therefore, nothing to do with whether the creation of sustainability is a justified normative requirement (in ethical and legal terms), and what is descriptively responsible for our realising this requirement or not.

Thus, a definition of sustainability is mainly about clarity and comprehensibility in relation to what is mentioned in this book. The core idea of the UN Brundtland Commission, i.e. the main starting point of the modern sustainability debate, can be used as a basis for defining sustainability. The core intention of sustainability is thus to broaden the perspective of politics/ethics/law from an intertemporal and global perspective: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The fact that globally some people are destroying their livelihoods with their prosperity, while many others are starving, should be linked, according to the UN Brundtland Commission, and tackled together in a gigantic global effort. It is about achieving sustainable and globally practicable forms of life and commerce. *Sustainability is therefore about extending the idea of justice, i.e. the normative question of the right society (for the definition of justice more closely in the following chapter), in spatio-temporal terms, i.e. towards intertemporal and global cross-border justice.*

Three-Pillar Sustainability – A Discourse on the Wrong Track

This is largely reversed when sustainability provides the terminology for the “generally desirable state of societies”, so that the classic definition of justice lines up perfectly with sustainability – and the issue explicitly called “justice” is then reduced to social distribution issues that arise on the road to sustainability as a question in the “downstream” of sustainability. In a sense, this is the consequence of the fact that, according to a widespread view, sustainability is much broader in definition than proposed above and simply requires a balanced pursuit of the three pillars of ecology, economy and society without emphasising the generational and global perspective (correctly, however, Ott and Döring 2004; Ott 2014; Unnerstall 1999; Gough 2017; see also Appel 2005 and Bosselmann 2016). Thus, for example, the profit interests of companies and the existence of a stable climate that is vital for human survival are formulated as equal-ranking goals between which a “balanced” solution must be sought. Moreover, the broad pillar model suggests that ultimately any political question is somehow about sustainability.

But the preservation of clarity of definition rather speaks against this three-pillar model, as do the empirical background assumptions contained therein. The three-pillar model ignores the paradigm shift as the core idea – more generational and global justice – and literally distracts from it or pushes it back (under a shameless guise). For by talking about the “three pillars”, sustainability suddenly embodies only the rather unspectacular message that political decisions should continue to reconcile various interests, primarily those of today (“more growth, more nature conservation, more kindergartens”). If that were the case, however, the new word sustainability could have been avoided; from the point of view of clarity, the word should simply be dispensed with. And the paradigm shift can already be found in the literal sense of the word: linguistically, “sustainability” always presupposes a long-term relationship, i.e. that a lasting existence on this planet is to be opened up to humankind. Sustainability does not include environmental, social or economic policy objectives without the typical cross-generational and global reference, even

if they can be endorsed for other reasons (and can therefore be weighed up with sustainability; more closely: Chap. 3.6). The three pillars distract from the actual conflicts to be dealt with in terms of content: for example, from the collision between sustainability (in the sense of intertemporal and global justice concerns) and the economic growth interests of those living today.

Furthermore, a separation of ecological, economic and social aspects in the relevant areas is hardly possible: a type of resource use that takes into account future people and people in developing countries (which would therefore be sustainable in an intertemporal and global way) can be read as both “ecological” and “economic”. And would better air quality, for example, only be an ecological goal, why not a social or economic one? Or is health, for example, a social or an ecological goal? Or perhaps an economic one, because it saves costs for medical treatment? And what exactly does the extremely diverse and vague concept of “social” mean in the end? Thus, the distinction of three pillars does not promise any clarity in terms of definition.

All this in no way means the vague thesis of the “compatibility of economy and ecology” (this somewhat naive idea is also constantly recurring today; alongside Stern 2006, for example, in Roberts and Parks 2007, p. 24, who believe that more wealth for developing countries solves the climate problem). Environmental protection can certainly be economically advantageous in the short term (Chap. 1.4). The blanket compatibility thesis can, however, be misunderstood, which at the same time results in a further argument against the three-pillar distinction, which again refers to the preservation of the initial definition of “sustainability as a permanent and global practicability of ways of life and economic practices”. The compatibility thesis can be understood in the sense of the assumption that the protection of the basis of life is not feasible without economic growth. This is empirically wrong, as we have seen. Even if definitions are ultimately arbitrary, it may not make sense to base them on an empirically evidently false assumption.

Furthermore, the long-term reference of the word sustainability implies that sustainability is primarily about basic conditions of humanity and not about any aspect of economic and social policy in general. This was already the view of the Brundtland Commission and the Rio Declaration of 1992 (see its Principle 5), at least for the following reason: Conflicts over time can per se only affect issues in which today’s people have the power to influence the living conditions of future or young people considerably and perhaps even irreversibly. And this addresses questions such as food, water, wood, fertile soils – which are intertemporal and globally relevant. The question whether or not one should have a municipal theatre, on the other hand, is not one of them.

Rio Declaration and Sustainability Rules

All these aspects are visible in the Rio Declaration as, alongside the Brundtland Report, the central root of modern sustainability discourse in a large number of places (see in detail Appel 2005), particularly clearly in the aforementioned Principle 5. And Principle 7 of the Rio Declaration (joint but shared responsibility of

industrialised and developing countries) clearly relates sustainability to the environment. The elimination of unsustainable production and consumption structures (Principle 8) also does not exactly sound like “more growth and higher incomes in the industrialised countries”. Principle 12 is also quite clear, in that it mentions economic growth and sustainability alongside each other and thus identifies them as two concerns to be distinguished (which means that growth is precisely not part of sustainability).

In concrete terms, what has just been said about sustainability is often spelled out in sustainability rules – again not very much in line with the three-pillar idea: Sustainability therefore means that renewable resources are used only in consideration of the rate of growth, non-renewable raw materials are used sparingly (or under consideration of substitution possibilities), the assimilation limits of the natural balance are considered as a sink, thus damage to the climate and the ozone layer should also be avoided. According to what has been said, sustainability also includes basic global security of livelihood for everyone, including basic pensions, education, access to clean drinking water and medical treatment as well as the absence of war and civil war (which, incidentally, is again an area that cannot be classified as ecological, economic or social in its nature). Whether these sustainability levels are really required in normative terms can only be determined after an ethical and legal analysis (Chap. 3). Here, as already mentioned, it was only a matter of clarifying the definition of what is mentioned in this book. In addition, the difficult terms “strong/weak sustainability” can only be taken up after a substantive discussion, justification and concretisation of sustainability (Chap. 3.6).

Social Sustainability – A Discourse on the Wrong Track

However, “social policy as a whole” has little to do with the intertemporal perspective. For in social policy it remains unclear again how today’s people could make it possible or prevent it over long periods of time. For example, education policy for women, which is often a subject of discussion in the general sustainability debate (since women are very often “responsible” for many everyday resource-related issues), is perhaps an important instrument for getting closer to the goal of intertemporal and global justice. But it is just a means to that end. In contrast, the normative goal of “equal rights for women” has no specific intertemporal or global-cross-border reference. To put it simply: not every – undoubtedly – very important goal per se is an element of sustainability. Especially not every political question can be made a question of sustainability by pointing out that “values” and the “implementation” are also relevant to sustainability, and that this is after all “something social”. In this respect, the above concern applies once again. If one were to address other aspects of sustainability beyond those mentioned at the outset, then perhaps these would be more in the direction of how societies can achieve something like lasting economic-ecological stability: what a national, European and global economy could look like, who would have to act under the conditions of considerably reduced consumption of resources and probably without growth.

The difficulties with “pillar sustainability” and in particular with the criteria of social and economic sustainability (problematic also Enquête Commission 2013) draw attention to another much discussed but also problematic side of the sustainability debate. States and companies often strive for indicators and a measurability of sustainability in order to make sustainability visible in a simplified form through some well quantifiable aspects (so-called sustainability indicators) selected from the multitude of relevant factors. A real measurability is still striven for, if necessary, to the effect that all activities offset one another. Thus, certain development tendencies and own (real or supposed) successes are to be visualised and made understandable for a broader audience. However, it is problematic that indicators that are often either not part of sustainability (see above) or, if the growth ideology remains unproblematised, even counterproductive indicators are chosen. Furthermore, the necessary level of ambition is overlooked; the permanent and global viability of commerce and lifestyles is not reflected when, for example, a company decides to produce 5-litre instead of 8-litre cars in the future. Another problem with indicator and measurement approaches is that seemingly precise individual factors suggest an accuracy that is not even given, because the selection of factors is ultimately arbitrary. This applies even if “quantification” may be attractive to politics and the media (and seemingly helpful for getting third-party funding from the point of view of researchers). The problems of indicator systems become even clearer when considering the attempts to translate different environmental problems into a uniform life-cycle assessment or even cost-benefit analysis (see Chaps. 1.2 and 3.9). However, as will become apparent, purely empirical interrelationships of various sustainability problems can still be mapped quantitatively to some extent. On the other hand, quantification and thus also indicator systems prove to be unsuitable overall – either by means of an is-and-ought fallacy based on natural scientific empirical data or by means of an equally problematic cost-benefit analysis: Chap. 3.9).

The Vague and Non-binding UN Sustainable Development Goals

The legally non-binding Sustainable Development Goals (SDGs) adopted at UN level in autumn 2015 also present a mixed picture in the sense of what has been said so far (more optimistic Kim and Bosselmann 2015; on the international environmental soft law generally Friedrich 2013). They are as conceptually vague and broadly dispersed as the indicators criticised above, with which many companies and countries work. The goal of a soil degradation neutral world (which would in fact correspond to the meaning of sustainability), for example, is vague alongside very concrete, in some cases also very ambitious SDGs. Traditional growth targets can also be found quite arbitrarily among SDGs.

This chapter showed that the most convincing definition of sustainability is not the three-pillar approach. As already stated, this is all about a definition of sustainability. All this does not exclude, for example, that certain laws may use the word sustainability in a completely different way. By the way, the legal analysis of the term sustainability in laws and its different uses is only a (very) small part of the

further processing of questions around sustainability. Other governance perspectives will prove to be more effective instruments of sustainability enforcement (in Chap. 4) – and not vague commitments “to more sustainability”, some of which can be found e.g. in planning law. And even when it comes directly to normative goals and their justification and consideration, the following will focus more on human rights (legally and ethically) and not on an alleged principle of sustainability “in itself” (more closely Chap. 3.2; misjudged at Cordonier Segger 2008; more clearly Bugge 2008 and Unnerstall 2005).

1.6 Basic Terms, Epistemology, Levels of Rationality and Misunderstandings

Rolled up in the case of sustainability, this book deals with a spectrum of problem levels in the different disciplines of behavioural science. This chapter deals with these questions and with some related problems of epistemology and theory of rationality.

Transdisciplinary Sustainability Research in Human Sciences

The three main questions that can be addressed by sustainability research in humanities in this way could also be summed up in the terms: Transformation conditions, political and legal instruments, and normative issues. Or: Behaviour conditions, behaviour control, and normative behaviour assessment. In order to be able to work out what we can know about these questions and with which methods and derivations, some preliminary explanations are still necessary (in Chaps. 1.6 and 1.7). Besides the methodology and further definitions of terms (such as justice, governance, and truth), this also concerns some basic epistemological distinctions such as the distinction between is and ought, between genesis and validity, and between objective and subjective as well as a clarification of the concept of reason – and the elimination of some misunderstandings in this respect.

For many, the disciplinary viewpoint of this treatise is already confusing. This study is transdisciplinary, i.e. it operates in relation to problems and not disciplines (Scholz 2011; Scholz et al. 2006; Schneidewind 2009). The developed problem levels can also hardly be investigated in any other way, as otherwise essential aspects would be missing in each case. Transdisciplinary sustainability research in the human sciences does not mean combining different forms of knowledge such as “science” and “practice”, because such a formulation is based on a misunderstanding. Certainly, the world is full of uncertainties, and often people or disciplines only grasp parts of the truth due to dogmatic pre-determinations. However, the fact that there may be explicitly contradictory yet valid “truths” (as assumed by the concept of theory-practice transdisciplinarity) implies positions that are untenable in epistemological terms (as will immediately become clear in the critique of constructivism in the following). In no case transdisciplinarity is a matter of placing

something “alongside” the classical disciplines and their discourses; rather, it is a matter of their analysis, criticism and continuation (and it is trivial that legal, ethical, sociological, etc. insights cannot only be generated by scientists at university but also by practitioners and sometimes even by ordinary people in daily life). In any case, transdisciplinarity does not mean that scientists do not come from the discourses of specific disciplines. A spontaneous emotion such as that the author of this book may not be “a lawyer”, “a philosopher” or “a sociologist” because he does not focus solely on the core questions of a single discipline would therefore ignore the intention of transdisciplinarity. Admittedly, transdisciplinarity may not always meet the human need to find identity and define boundaries. Fields such as, e.g., political philosophy, justice theory, legal theory and philosophy of law are then often experienced as largely separate areas and are thus supposedly kept manageable, although the same questions are largely negotiated (with the result that mutual knowledge of research results and arguments actually seems absolutely necessary).

Epistemology: Objective Versus Subjective – Are There Objective Facts? Against the Aberrations of Postmodernism and Constructivism

Let us now turn briefly to epistemology (closer Ekardt 2016; Ekardt 2017). The epistemological categories and distinctions mentioned at the beginning of this section are by no means trivial; rather, they are regularly misjudged and confused (see for example Lang et al. 2014; Fazey et al. 2018) – in sustainability science, in human sciences, and sometimes also in natural sciences. One can already ask whether any objective facts exist at all (for example, on climate change, on the motives for human behaviour or on the effectiveness of certain instruments). These questions are all the more necessary because in society and science there has been a kind of trend towards a postmodern world view for a long time, which ultimately drops the idea, at least in principle, of an objective truth. If statements of fact can be objectively true (and normative statements objectively correct), the term “objective” means that they are rationally recognisable and can therefore be understood by everyone. Objective truth with regard to facts means the correspondence of a statement with a fact of the real world, whereas the correctness of normative statements and justice means the rightness of social orders, without a test object being available in the “outer world” as it is regarding truth (Habermas 1981; Habermas 1999; Alexy 1991; Ekardt 2016).

However, there have been tendencies against this claim of objectivity and towards scepticism (like postmodernism) in Western culture since the ancient Sophists. For some 150 years and increasingly for 50 years, this has become a phenomenon that has become almost dominant in some areas of thought, such as some humanities (see e.g. Rorty 1989; Foucault 2006; Luhmann 1993; Kelsen 2000; Siemer 2006). So, what is their problem with objective truth? When one is told that certain things can easily be observed or proven in some other way, one often gets the answer that an individual always only presents a subjective viewpoint which is coloured by

one's own interest and which reflects certain social power relations that need to be criticised. Apart from the fact that such a critique of power relations logically – unrecognised by most postmodernists – presupposes that norms (!) can be objective (otherwise the power of whoever would not be meaningfully criticisable), such a perspective does not convince even as a questioning of the possibility of objective facts:

Whether there are objective facts at least in principle (i.e. also in questions of sustainability), no matter whether they can be proven concretely in individual cases, has nothing to do with the widespread and accurate insight that is common to all of us in everyday life, that in fact our subjective viewpoints repeatedly interfere with our knowledge of the facts and, incidentally, also with our knowledge of standards, and that we therefore tend to a view which is subjectively twisted rather than objective. This sociological constructivism is undoubtedly true, but it by no means proves that objectivity – for example through careful examination and discourse with others – is absolutely impossible (philosophical constructivism; very aptly on that Berger and Luckmann 1966). For example, it may be that there are natural scientists who express pros or cons about the existence of human-made climate change because they expect it to bring financial benefits, such as research contracts. However, such subjective distortion does not prove that there are no objective and undistorted findings on climate change. More formally speaking, one can also say that the truth sceptics confuse the genesis of a statement with the validity of a statement. For example, as the son of a world-traveling physicist, I may consider the earth a sphere only because my father taught me to do so under the threat of corporal punishment (genesis). Irrespective of this, however, the statement would still be correct (validity) – quite independent of which “power relations” caused me to be convinced of this statement (misjudged, for example, by the entire discussion about the factual physicality, emotionality, etc. of humans – exemplarily Damasio 2006 and various contributions in Philippopoulos-Mihalopoulos and Brooks 2017).

How misleading the reference to the alleged mere subjectivity of facts is, is also illuminated by the fact that no human being can live without necessarily implying that the outer world and what we say about it is more or less coherent. How could it be explained that our coordination among ourselves and our dealings with the world work quite well if the world were “only subjective”? Moreover, the conclusions of factual subjectivism seem relatively strange. It would apparently be a matter of subjective opinion that you are dead after jumping out of the 90th floor of a skyscraper. Apart from that, subjectivism seems to be self-contradictory: for the statement “there are no true or untrue, but only subjective views” is a statement that obviously does not understand itself as a purely subjective opinion, otherwise it makes itself irrelevant. In other words: The observation of often very “subjective” perspectives logically presupposes that there principally can also be objective perspectives – otherwise the subjectivity in the subjective perspectives would not make sense at all. All this indicates that facts are not simply dependent on observers – but that our impressions do have their counterparts in the real world. It is also important to note, despite all the ambivalence of human existence that humanity is learning at least in some respects, i.e. that knowledge can gradually grow. Even the

talk of refuting previous knowledge and replacing it with new knowledge logically presupposes, however, that something can be objectively recognised.

Even the attachment of factual statements to the medium of language does not deprive them of the possibility of objectivity. Of course, language can create ambiguities and even confusion, but it is possible to solve the problem to a large extent through sufficiently precise wording. This applies even if the language community – or each individual – can ultimately freely assign meanings of words if he or she so wishes. Nevertheless, language is a medium that is entirely accessible to precision if desired. Furthermore, one should not be irritated by the fact that not all facts are reproducible or even quantifiable in experiments. Such an ideal of facts – based on philosophical empiricism – has spread widely over the last 300 years. But it is by no means imperative. In the field of human motifs, for example, there are many things that cannot be measured and reproduced at will, but can nevertheless be plausibly observed. This problem will be discussed in detail later in the methodology (Chap. 1.7).

Likewise, it is not possible to escape the above stated in a way that one (like Rorty 1989 and Siemer 2006) understands truth as “that which proves itself in practice”. Because if this were the case, it would again require an objective criterion. Also, the consensus theory recommended by the older discourse theory, according to which the truth is to be determined by a justified (not only factual) consensus of the responsible persons in the discourse, suffers from frictions. After all, what about the many historical cases in which all the actors, or at least the vast majority of them, were in serious error? Therefore, Habermas (1999, pp. 239 and 286 et seq.) in the end abandoned the theory of consensus.

Another general remark: Politically, a sceptical, postmodern or even constructivist epistemology is usually labelled as a left-wing project that is supposedly critical of power and emancipatory. In the light of this, it is almost fascinating to observe how the (left- and right-wing) populists are currently taking up the dismantling of truth and objectivity, pursued by the left for decades with the utmost virtuosity, and turning it into practical politics in the most anti-Leftist thrust, crowned almost Orwellian by the term “alternative facts” (Kellyanne Conway). Postmodernists, feminists, critics of capitalism, etc. (various representatives can be found in the contributions in Philippopoulos-Mihalopoulos and Brooks 2017, for example) have long preached in continuation of Marxist ideas that facts and norms are never objective anyway, because everything is largely guided by power, capitalism, gender, ethnicity. Now populist leaders – often portraying themselves as saviours of the true will of the people – are threatening to undermine democracy by using this idea. The all-round protest against the “postfactual age” seems somewhat helpless in this respect, because the same circles have ultimately withdrawn any basis for criticism of the rampant postfactuality by abandoning the concept of truth. When it comes to facts and even more so when it comes to normative standards, there are often difficulties of proof and of scope for assessment. But that does not mean that everything is always subjective.

Three Very Different Ballgames: Objectivity Versus Subjectivity – Genesis Versus Validity – Is Versus Ought

Therefore, objectivity is in fact basically possible, and not just subjectivity. And it must be differentiated between the genesis and the validity of statements, even if they are both objectively correct; the distinctions objective versus subjective and genesis versus validity do not necessarily coincide (the common ideology-critical address against certain facts and norms thus proves to be logically wrong; it can only act as an impulse to re-examine a thesis; it cannot afford to refute it). In other words, if the Maldives should 1 day sink into the sea because of a climate-induced rise in sea levels, this would still be a fact, even if millions of Germans would subjectively construct this for themselves in such a way that nothing sinks at all. Furthermore, it doesn't help to think all the time about whether someone is only advocating all these theses because he had a difficult childhood, because he is a man or because he is a capitalist. It would also not be a matter of opinion (for the individual or even for a social group) whether climate change is the cause of this event – or whether the sinking is rather due to the fact that the islanders have played the guitar too often. Of course, not all kinds of facts are equally easy to grasp objectively. Causes and internal facts such as emotions, for example, are sometimes difficult to prove, just as the perpetrator who killed Grandma Erna last night is sometimes difficult to find, and sometimes we do not get a definite answer, at least not today. Nevertheless there are causes, thus causal connections of several processes, even if we can not always prove causes. Nor is it simply a “matter of opinion” whether the emission of greenhouse gases can be reduced more effectively, for example by banning driving cars on sundays or rather by worshipping a glass of water. *Nota bene*: That the normative evaluation of sinking islands, for example, can also be done objectively is a detailed topic in the following chapters.

Consequently, the facts may of course be uncertain in individual cases. Uncertain aspects of facts can only be assessed subjectively. Basically, the respective fact – for example climate change or the fact who murdered Ms. Smith in the street – remains objective, even if no one knows for sure (at least the murderer will know the answer, by the way). A subjective assessment of facts is not an evaluation, even if subjective and judgmental terms are constantly confused. One can subjectively assess that climate change at this and that speed has exactly the consequence XY –but that does not mean that this consequence is normatively welcomed or regretted.

Besides the separation of subjective and objective perspectives on norms and facts (and of genesis and validity), the separation of facts from norms/evaluations/goals/purposes (the terms are used here synonymously) must also be taken into account. Otherwise the standards for precise thinking remain unclear in a key aspect. Climate change (fact), for example, does not imply its imperative or prohibition (norm), even if even researchers, who were repeatedly suspected of being awarded the Nobel Prize, talk as if some norm would imperatively derive from their facts: for example, that climate protection is absolutely essential. But this conclusion is

pointless, even if many public discussions are going on like this. Rather, one needs an evaluation criterion, i.e. a normative standard that says “one should not kill people” or “one should maintain the basis of human life and thus a stable global climate”. And this evaluation criterion cannot be observed anywhere in the outside world; one can only justify it – on an ethical or legal basis (as we will see in the following chapters). Certainly, facts deliver the subsumption material of a valuation. Anyone who, for example, regards climate protection as normatively important, also in consideration of other goals, must of course also check whether climate change even exists. Nevertheless, facts and norms remain twofold here.

Therefore, facts and norms must be distinguished, and for both (and not only for norms) it is possible to discuss whether they can only be subjective or also objective, although this is forgotten over and over again – in sustainability research and in science in general (see as an example Lang et al. 2014; Fazey et al. 2018). For facts the discussion on objectivity has just been conducted; for norms or standards it will be conducted later (in Chap. 3.1). It also follows from the distinction between is and ought that we must distinguish between the factual explanation and the normative evaluation of behaviour. Totalitarian injustice, for example, can be explained without justifying it normatively. One can (see Chap. 2.4) try to explain how the Nazis came up with the idea to establish a supremacy of the Aryan race – normatively, however, one definitely cannot approve of it. It is equally important not to short-circuit “Facts are objective, norms are subjective” – because, as I said, for facts as well as for norms, the question can be raised as to whether they can be objective or not. A frequent problematic short-circuit is also the deliberate misrepresentation of facts, for example women as a whole as smarter or as dumber than men, because it is hoped that this will influence the realisation of certain norms, for example to promote or undermine gender equality.

Objectivity and Reason – Different Levels of Rationality

If statements of fact can be objectively true and statements of standards objectively right, then “objective” means, as I said, that they both are rationally recognisable and that everyone could at least understand them. Therefore, the idea of objectivity is directly interwoven with the idea of reason. Instead, one can speak of intersubjectivity. This then emphasises more strongly the limits of human knowledge and the fact that in the course of time humanity as a whole also learns more, that is, our limits of knowledge shift. Intersubjectivity does not mean that everything is subjective. If this were the case, one could not speak of older findings being recognised as false and replaced by better ones.

But what does reason or (as a synonym in this book) rationality mean? It means the ability to decide questions with reasons. When it comes to the question of the validity of ethical-legal principles, norms, objectives or general evaluations, including the question of their interpretation and balancing, we speak of normative reason. Values or valuations (or to a large extent synonymous also: norms) should be the

generic term, and the (basic) order of a society means a certain system of such values or valuations. On the other hand, instrumental and theoretical reason act on facts, i.e. on descriptive truth, not on normative rightness. Instrumental reason is about which means are most effective in implementing a norm, such as a certain climate target (or even a completely selfish goal such as stealing an object) – perhaps through emissions trading, a levy or a ban. The theoretical reason is about fact-finding without any concrete reference to action, as in natural scientific climate research. Besides this system, ultimately based on Kant (and Habermas 1981), one does not need Max Weber’s separation of rationality of purpose and value, if only because it can be understood as very different things. Furthermore, it would be rather confusing to form a term “collective rationality” (Scholz 2011), which is also meant less in terms of epistemology; it is merely intended to indicate that self-interest and the good for several people can fall apart, which is however a problem of behavioural research, not of epistemology (Chap. 2). It is also problematic if the somewhat vague term transformation research is frequently used and this is generally described as normative (see for example Lang et al. 2014; Fazey et al. 2018; tendentially also Scholz 2011). According to the above, in terms of sustainability, the identification of transformation conditions is to be assigned to theoretical reason and thus descriptive; finding effective instruments for goals is also purely descriptive, since it belongs to instrumental rationality. Only the (ethical, legal or political) determination of objectives is normative.

Further Definitions: Justice, Anthropology, Governance, Human Rights, Constitutions

Since the present work is concerned with ethical and legal issues (i.e. justice) and also policy instruments (i.e. governance) in addition to transformation conditions, some definitions are still needed now, since these terms circulate in diverging meanings. *Justice* means the correctness of the basic order of living together and of all rules issued within this framework, whether on a national, European or even global scale (similar: Rawls 1971; Habermas 1992). Justice is therefore not a value among others, but the basic concept of normativity. Others speak of “legitimation” instead of justice (theory), morality or ethics, and in some cases, the will of the majority is used as the sole criterion of legitimation or justice (critical of this: Chap. 3). In any case, justice here does not merely mean “social distributive justice”, i.e. the question of how a certain material cake is to be distributed socially. Ethics or morality therefore mean the theory of justice (one can also say political philosophy or legal philosophy), not the area of happiness or a good life, in which, in contrast to justice, the freedom of several is not affected (and which therefore must not be legally regulated: Chap. 3.4). Sustainability is a key aspect of justice, namely its intertemporal and global expansion. In all of this, the field of ethics or the theory of justice is initially directed towards social ethics, but it may also produce an individual or even corporate ethics (the latter proving to be

less meaningful below: Chap. 3.2). However, ethics has nothing to do with mere conventions; they are merely ideas of a good, successful life. By the way, statements on justice are not an “idealisation”, as it is called in various social sciences; they are simply not empirical statements, but rather statements of purpose (this is why the criticism of Sen 2009, for example, forgets the distinction between principles of justice, balancing rules, anthropology and policy instruments). Economists and political scientists usually do not speak of justice but tend to speak of cost-benefit analysis or efficiency analysis, which are key to justice, very often associated with the idea that this is not ethics (critical of this: Chaps. 3.1 and 3.9). In turn, the risk theory, maintained by natural scientists and sociologists for dealing with uncertain risk situations, is referred to as risk assessment or risk management (also critically Chap. 3.9).

Anthropology or action theory (or theory of society), unlike the theory of justice, is not about normative issues; rather, it describes purely de facto what it is that drives people individually and collectively. So, it is about what drives individual and social change. This is what we do when we investigate the conditions of transformation to sustainability. As already mentioned, normative explanations and descriptive explanations (ergo justice theory and anthropology) are clearly separated here (Kellerwessel 2003, p. 16; Gewirth 1978). Often both are mixed up (even in Habermas 2009; in sustainability science e.g. in Lang et al. 2014 and Fazey et al. 2018). This happens for example when modern human rights are “justified” by their history instead of merely being explained, or when empirical views of justice are researched in the population (moral sociology) and this is considered normatively relevant per se. The defects of ethics, which nevertheless empirically justify (!) norms, will be examined in more detail later (Chap. 3.1; the institutional theory of political science not dealt with in detail in this book would also fall into this category).

Governance or control is about the implementation of certain political goals that are assumed to be right – and that, if they do not happen on their own, through effective instruments of influencing behaviour. Justice thus points to a normative question, governance to an empirical question (of instrumental rationality, as mentioned earlier): Governance is about how the just can actually be enforced in a world in which we all often have other motives than justice (e.g. self-interest); justice, however, remains the basis or the framework for determining goals and means of governance. The term governance is thus used more narrowly than, for example, by many political scientists. The same applies if aspects such as learning processes, self-regulation, etc. are taken into account. It is important that governance research identifies in this case the most effective instruments – and not, as is often the case in political science, for example, as a pure description of actors and of the institutional and instrumental sustainability efforts actually undertaken (which are predominantly not very effective, as we can learn e.g. from the climate emissions: Chap. 1.2; as an example for a narrowed perspective: Bailey 2007). Effectiveness refers to the impact of e.g. political-legal or other measures with regard to an objective such as sustainability. In contrast, cost efficiency, which is only briefly discussed in this book (just like distributional effects), describes the monetary effects of an effective

instrument in governance discourse (for more details see von Bredow 2013; on technical efficiency, see Chap. 1.3). Efficiency in the broader sense is synonymous with the result of a cost-benefit analysis in terms of “weighing all factors”. Institutional feasibility, acceptance by the norm addressees, and dynamic incentive effects are subspects of effectiveness. A separate aspect would be the enforceability *de facto*, i.e. the existence of a political majority, but it says nothing about the effectiveness of a measure to achieve an objective.

The *constitution* – on a national, continent-wide, e.g. European, possibly also (to some extent) global scale – is the legal expression of the concept of justice, typically containing individual rights, institutional arrangements and procedural rules like e.g. competencies for legislation (Giegerich 2003; Habermas 1992; Ekardt 2016). In any case, if a constitution meets the objective requirements of justice (see Chap. 3), it is the just framework for policy-making and therefore the basic order of the respective societies; if it does not serve this purpose, it might be a constitution, but is not a just constitution (but only a constitution considered to be just). At the same time, the constitution and *law* can “steer” human behaviour as a social system in the fundamental questions of conflict resolution in coexistence by writing down a general doctrine of justice, while also concretising it and ordering its enforcement under threat of sanctions (more closely to law and its relation to justice in Chap. 1.7). *Human rights* (or fundamental rights) are a central topos of ethics and law. Under no circumstances are human rights “philosophical” and only fundamental rights “legal”. Both concepts mean the fundamental rights of the individual, both ethically and constitutionally. In all of this, *policies* would be a different word for the governance instruments. They would also be terms for the balancing decisions between different interests within the framework of justice or the constitutional framework. This makes clear that, on the one hand, law is and should be the instrument of politics and, on the other hand, it sets and should set a framework.

In all this, justice and governance do not interact in the sense of the juxtaposition of “legitimacy” and “effectiveness” of politics, which have to be balanced according to many (for example Habermas 1992). Legitimation in the sense of “normative acceptability” (i.e. not automatically in the sense of factual acceptance) or “justice” does not only require the existence of a democratic majority (Chap. 4.5). Moreover, a fair basic order/constitution of course also requires that we not only recognise the right thing, but that we also put it into concrete terms and enforce it. Therefore, if justice is to become real, it needs governance instruments to enforce it. Thirdly, there are no problems and no effectiveness “in and by itself”; what is a problem that needs to be solved effectively is rather a question of what can be derived as a normatively relevant problem within the framework of justice.

This chapter showed the importance of fundamental distinctions from cognition theory such as objectivity versus subjectivity, genesis versus validity, and is versus ought. Furthermore, it explained the different kinds of rationality, and it provided some important definitions of terms such as governance, constitutions, human rights, justice, or anthropology.

1.7 Transdisciplinarity and a New Methodology for Behavioural, Governance, Legal and Ethical Analysis: Beyond Empiricism and Quantitative Versus Qualitative Methods

After giving definitions and laying out epistemological foundations, the investigation now turns to methodology. We will discuss the methodology for behavioural analysis, for governance research, and for legal and ethical analysis. In doing so, we will overcome certain aberrations such as empiristic epistemology.

The Core Aberration: Empiristic Epistemology

The methodology of transdisciplinary sustainability research in the human sciences which this book is (also) based on, is difficult for many scientists to digest. The idea of epistemological empiricism from the seventeenth century which still shapes many researchers today, that natural and social science is all about facts (not norms), and, moreover, about quantifiable and reproducible facts, reaches its limits here. Both the identification of behavioural drivers (to sustainability or non-sustainability) and effective policy instruments require a broader methodology, as we will immediately see – and as far as ethical and legal issues are concerned, it is not even a matter of facts, but of standards with their own methodological approaches. Precise analysis of complex (empirical or normative) interrelationships and the many often incomplete and contradictory arguments and facts available will therefore play a far greater role in the present work than any kind of approach close to natural science. In the following, governance and behavioural research is examined first, followed by ethics and law.

Governance Research and Behavioural Research

Governance research operates methodically at the intersection of jurisprudence, sociology, political science, economics and other disciplines; because it deals with the effects of current and conceivable policy instruments and thus of laws; because policy instruments are almost always of legal nature. For instance, emissions trading, an eco-tax or a product label for consumer information can only become a policy instrument if they are brought into a legal form and thus prescribed. Governance analyses – some call it regulatory impact assessments – are a recognised research approach in the disciplinary intersection described above. They assess the impact of current instruments and possible alternatives in terms of effectiveness (and, where appropriate, cost efficiency). Such an assessment, which due to the interactions often cannot be meaningfully related to an instrument alone, has several elements: (a) text analysis of relevant instruments or legal acts including relevant jurisprudence; (b) original extraction or – so mostly in this book – secondary analysis of quantitative or qualitative empirical material on the actual implementation

of an instrument and on the consequences of the instrument, and examination of economic etc. circumstances affected and influenced by the instrument; (c) application of comparative or theoretical insights on the steering effect of certain types of policy measures derived from condensed experience with policy instruments. In the case of new proposals and, to an extent, completely new challenges such as the drastic Paris climate targets, all these paths alone hardly lead to substantive statements, since there is no precedence for a transition to a fossil-free world – and because the complexity is particularly high.

In order to research the effects of current and alternative governance approaches and explain deficits, it is therefore necessary (d) to make additional use of behavioural (cultural, political, economic, legal and social science as well as biological, ethnological and psychological) findings regarding human behaviour. These must be determined, compared and further conclusions drawn from them. This is essential if we want to understand and anticipate how people will react to certain control incentives. Behaviour and its motivational causes ultimately represent the central issues of research in human sciences. The research field suffers from the fact that the many efforts of different disciplines hardly take note of each other and therefore, narrowed results are the rule rather than the exception. It is a key concern of this book to change that. And by analysing the methods of behavioural research in different disciplines, I will also demonstrate how research about the conditions for transformation to sustainability could succeed.

Why Empiristic Behavioural Research Is Not Sufficient – Beyond Experiments, Surveys, and Real-World Laboratories

Under the influence of economists, the idea that behavioural research per se must proceed analogously to natural science has dominated for some time. This means – as mentioned earlier – that research results should be reproducible and quantifiable (Milinski and Marotzke 2015, pp. 93 et seq.; critically Kivimaa et al. 2015; Schubert 2015; Scheidler 2015; Gough 2017). To make this possible, economists and psychologists in particular conduct game-theoretical experiments. In game theory, as the name implies, real behavioural situations are simulated. Then, for example, the climate-change-related motivation of entrepreneurs and politicians (or consumers) is looked at through role-play arrangements in laboratory situations by simulating e.g. climate conferences or everyday consumer choices. Likewise, complex scenarios can arise on such a basis, supplemented by many economic, social and scientific data, as it could continue with climate protection, for example. On the other hand, many sociologists and political scientists expect more from interviewing people – whether in large numbers with questionnaires (see e.g. Tapia-Fonllem et al. 2013) or rather with a small number of respondents in detailed, more or less freely designed interviews.

However, the empiricist focus on countable and reproducible facts (and leaving norms aside) is by no means epistemologically self-evident. We will see later that normative standards can be recognised objectively as well. And we will see right now that there is strong evidence that there are approaches to understand human behaviour that are less based on bean counting and reproducible experiments, even though are of great importance. If you want to know how individuals and societies are changing and how people will react to certain political measures, you need to know their behaviour. This knowledge must be acquired in a way that does not already distort behaviour through the mere fact of awareness, for example, because the observed begin to behave differently, because they feel they are being observed. Furthermore, one must not only recognise the behaviour itself, but also its motives or causes in order to actually influence and fully understand behaviour. Human motives, however, are not visible anywhere in external reality. Likewise, the causality between motives and actual behaviour, even if it is part of the world of facts just like (sustainable or non-sustainable) motives, is not visible as such.

If behaviour and change (e.g. to sustainability) are to be understood, it will therefore often be a question of drawing conclusions: from behaviour to motives and from behaviour and motives to causality. Using a philosophical term, this is a conclusion based on the best possible explanation. Whether someone who represents an entrepreneur in a game-theoretical experiment is acting out of self-interest or out of altruistic values, unconscious ideas of what is to be considered normal (or for other reasons) cannot be seen in behaviour itself. The fact that, for example, a player in an experiment chooses the option that brings him economic advantages does not conclusively show that his motives are limited to self-interest and conscious calculation. Other motives may also play a role. Furthermore, the correlation of two factors does not necessarily mean that these are the only interacting factors. This situation does not change at all if a lot of mathematics and modelling is used – especially as mathematics is of little help in an area such as sustainability, in which all those involved operate under high uncertainty and therefore the elementary basis for valid arithmetic is already missing.

The problems that arise with all this can be exacerbated in this way: Behavioural drives (e.g. towards sustainability) are very difficult to grasp in a formal way – and at the same time every attempt to grasp threatens to fail due to the enormous complexity of the transformation to be depicted or to remain fictitious instead of capturing the reality of the transformation. These problems are of a fundamental nature, and they apply equally to experiments and surveys – whether quantitatively with many people or in interviews with a few people (aptly Hamann 2014; Scheidler 2015; skipped at Lang et al. 2014 and Tapia-Fonllem et al. 2013). The difficulties occur particularly intensively on sustainability issues because the complexity is particularly high here and the motives that drive us away from the behaviour actually required are particularly strong (Chap. 2). However, these problems are not limited to sustainability issues.

One obvious friction in surveys, for example, is that respondents often do not reply truthfully, in terms of both their behaviour and their motives; in addition, there are other distorting factors such as the desire to please the interviewer, to meet the expectations of the experimenter and to remain in accordance with social conventions (Kuckartz 2014; Hamann 2014; Ekardt 2016; overviewed in Tapia-Fonllem et al. 2013). The way questions are formulated and posed and the context of the discussion often also preform the possible answers. If a survey is about environmental protection, for example, the issue is a priori labelled as relevant and socially desirable. Just by actively addressing a question, behaviour and motives are transformed in a considerably – people appear, to put it bluntly, more eco-friendly than they actually are. Such problems can be minimised, but hardly eliminated by the surveying technique. In addition, there are clear limits to accounting for the complexity and possible unconsciousness of the motives and the variety of everyday individual actions from eating and mobility to home, which would be relevant in terms of sustainability. There may also be misconceptions about one's own behaviour and its motives based on emotional mechanisms such as repression, which we will look at in more detail later (Chap. 2.3).

In principle, these objections also apply to experiments, for example in game theory or even in real-world laboratories, such as a role play on a low-resource life-style for a certain period of time in real life. Here, too, social desires and observers influence human beings. And here, too, the motives cannot be measured. In addition, the translation of the usually highly complex reality (in terms of initial situation and options for action) into a simple experiment can hardly succeed (this is *cum grano salis* also true for surveys). Just imagine the above-mentioned game-theoretical situation in which the highly complex global climate negotiations are reenacted (critically Kivimaa et al. 2015; affirmative Milinski and Marotzke 2015, pp. 93 et seq.). Also, the fact that in reality both the initial situation and options for action are usually associated with a variety of uncertainties can hardly be depicted experimentally.

Furthermore, every officially and openly observed situation per se is a considerable intervention in reality. This means: Besides the unassailable complexity of reality and the social desires, the purely hypothetical character of an experimental situation is problematic. It is something fundamentally different whether you only pretend to be extremely ecologically-friendly for 2 weeks or whether this is actually permanent. Or when I just act how it would be if my wife left me tomorrow morning at seven – in contrast to my actual behaviour when it actually does occur. Moreover, for these and other reasons, behaviour experiments cannot be repeated as reliably as chemical or physical experiments.

Towards a Broader Approach for Behaviour and Governance – Including Sociobiology, Participant Observation, Self-Observation, and Others

These circumstances are partly known in specialist discourses – and they are also easy to see. This makes it all the more incomprehensible why a broader

methodological approach is not being sought as an answer. No solution would be to postulate a simple behavioural model such as homo oeconomicus like the economic mainstream, i.e. to assume that people are always consciously calculating and purely benefit-oriented – and usually self-interested. This is then used as a basis and as a supplement to game-theory experiments. Despite the fact that the content is far too simple (Chap. 2.3), the complex methodological problems of behavioural research that result from the factors mentioned above are thus obscured. All this does not completely devalue experiments or surveys. They can certainly provide information on behaviour, its causes and thus the conditions of change. But these insights are often distorted. So, you need additional sources of knowledge. Incidentally, their suitability is comparatively high if the setting is chosen in such a way that the actual experiment remains largely hidden from the subjects, as in the famous Milgram experiment (Milgram 1974).

When behaviour is difficult to grasp and the motives and causalities are primarily interpreted, knowledge about essential things about motives, change and often already about behaviour itself must be acquired through other, less formal sources. This means e.g. the personal and extensive observation of others and oneself. So far, this is best cultivated in ethnology and religious studies under the term participant observation (Malinowski 1932), which is carried out by the observer as a participant in a real-life situation. The behaviour is used to draw conclusions about motives and thus to react to the aforementioned falsifying factors. Sustainability issues in particular cannot do without the observation which goes mostly completely unnoticed – and, of course, is most frequent and comprehensive – as well as critical self-observation. Especially in this social sector, many maintain a very environmentally friendly self-image, which unfortunately contrasts sharply with a large ecological footprint (Chap. 2.2). For instance, it is useful (as the author has done for over 20 years) to pay attention in a very large number of everyday conversations – without special activation of social expectations and without artificially induced situations – which position people take on sustainability issues. Another interesting approach is to observe how they express themselves, for example, in the protective anonymity of internet commentary forums. For example, 300 hate comments were made on an article by me on flights and climate change in the national newspaper ZEIT (see Ekardt 2018; I will come back to this example several times in the following). Another simple, but very instructive observation I have done recently is analysing the Facebook profiles of 246 Facebook friends of mine that can be characterized as young sustainability activists born 1988 or later (based on their posts, memberships etc.) – 203 of them presented pictures of (several) long-distances journeys on their account.

It is therefore particularly useful (in the sense of results that are as authentic as possible) if the observation as such is either not at all or at least not consciously recognised as a situation of observation. Because of the less formalised character of such observations, which is susceptible to subjective influences on the part of the observer, further control mechanisms are necessary in addition to triangulation with surveys and experiments. Thus, the insight already formulated by Thomas Hobbes (1966) seems apt that self-observation can be a helpful reference point against

which external observation can be checked. This is even though I am probably not aware of every motive myself. In addition, historical studies can be very informative and conclusions drawn from the evolutionary origin of man (Wilson 2012; Nowak and Highfield 2013; Tomasello 2017; Thornhill and Palmer 2000; more detailed Chap. 2.4). Experiments and surveys can also be another, but not the only, source of knowledge that can contribute to an examination of observation results. Finally, it should be pointed out that knowledge of the reciprocal influence of the actors has explanatory potential (see Chap. 2.1). Another important additional tool is the use of statistical data, e.g. on resource use per capita.

All this shows how difficult it is to observe human behaviour and analyse its motives. The exemplary application takes place when we explore the transformation conditions for sustainability in Chap. 2 and at the same time present a new, transdisciplinary theory of human behaviour. In accordance with the difficulties pointed out in behavioural research, the effect of proposed governance instruments cannot be predicted with total certainty and a method pluralistic approach is comparatively the best way of clarification. Case studies or scenario-based research (or an actor analysis: on all this Scholz 2011) in contrast offer no solution to those problems at hand, since they also require behavioural assumptions, which takes us back to the methods discussed. At the same time, it can be seen from all of the above that a real quantification of governance and behavioural issues is very difficult. This applies even more when the difficulties described with regard to economic or natural scientific contexts – such as sustainability problems – encounter a high complexity that can hardly be quantitatively depicted (see Chaps. 1.2, 3.6, 3.7 and 3.9).

The triangulated approach to the analysis of human behavioural motives not only provides an analysis of the causes of non-sustainability or the conditions of a transformation to sustainability. Also, as already indicated, a multi-methodological qualitative governance analysis, in the sense of a search for effective measures and concrete political-legal instruments to achieve given objectives, can be based on this triangulated approach. The more or less qualitative character of behavioural and governance analysis results from the uncertainties that have been demonstrated above – and without exactly quantifying human behaviour, the impact of governance instruments cannot be exactly quantified either. The fact that there are further challenges with quantifying modelling and scenarios has already been discussed (in Chap. 1.2; on figures and sustainability in detail: Ekardt 2019; more optimistic Scholz 2011). Similar to formalised experiments, the modeling of transformations and governance options should not be excluded per se; on the contrary, the approach here even uses such data (for example from climate models). However, the approach in this book is the clear plea to use those models and scenarios much more defensively than has recently been the case in science, the media and politics. Especially with regard to the two core questions of behavioural transformation conditions and completely new policy instruments, they can only provide little insight (and instead only provide a very rough e.g. macroeconomic background).

Multi-methodological Qualitative Governance Analysis in Four Steps

The concrete application of this multi-methodological qualitative governance analysis will become clear in the further course of Chaps. 2 and 4. Here are its steps:

- First of all, with regard to existing or alternative policy instruments, the listed approaches to text content, implementation studies and possible comparisons are useful, but as already mentioned, these alone are usually not sufficient, especially when it comes to instrument concepts and levels of ambition that have never existed before.
- Then, as seen, human behaviour patterns and especially behavioural motives can be analysed multi-methodically. As seen, surveys and experiments, as economists like to conduct, can also contribute to this assessment (e.g. to price elasticities among the addressees), however, all of which have their limits described in detail above; and in particular it is not enough to assume that every actor is purely selfish and constantly consciously-calculating as the economic mainstream does with game theory. In this respect, the above-mentioned multi-methodological approach to behavioural research must take effect (see also Kuckartz 2014; relying too strongly on the formal methods up to real-world laboratories and experiments Lang et al. 2014; Schöpke et al. 2015; Scholz 2011).
- The behavioural motives (described in detail in Chap. 2) that can be found with this methodology form a basis for making certain expected governance problems plausible to a high degree (e.g. rebound effects, shifting effects, etc.; see Chap. 4.4). The behavioural scientific access to governance problems is crucial for the examination of instruments for effectiveness on the basis of the given goals (and strategies) for sustainability. This applies not only to hypothetical governance options, but also to instruments that are already in place, because it is often difficult even in those cases to answer which social developments can really be attributed precisely to the governance instrument to be examined.
- The references to the governance problems show that supplementary factors such as the obvious characteristics of the instruments and other scientific, technical and economic conditions significantly contribute to identifying certain instruments to likely be effective or ineffective. However, as mentioned earlier, there is much to suggest that the multi-methodological governance analysis outlined in this way should be carried out qualitatively and that supposedly exact quantifications should be used more cautiously than has been the case up to now. This is because the behavioural motives alone and the governance problems based on them cannot be quantified comprehensively and precisely, but only selectively. But then, it is also not possible to use them mathematically, or it can only be calculated by accepting the problem that a large number of assumptions are made that do not have to apply in this way. In doing so, even meaningful probabilities for the occurrence of certain factors cannot be mathematically

determined, because these same probabilities are generally not known; however, this then thwarts calculations. The same applies to other scientific, technical and economic findings. In each case unclear causal relationships between various factors and, especially in sustainability issues, the ultimately global framework of reference are further complicating factors. This will often be exemplified in the following. Instead, it would not be enough to pay attention to external factors such as political majorities or characteristics of institutions (on these aspects Abson et al. 2017; Droste-Frank et al. 2015; Newig et al. 2015; Juerges and Newig 2015; Klein 2014; Klinsky et al. 2012; Herrmann-Pillath 2015, 2016) – which are important, but which in turn are an expression of the motivational situations mentioned. In any case, only optimally designed instruments or instruments that are strongly deficient can be compared – the popular exercise of evaluating an idealised instrument against a misconstrued other in practice takes us nowhere.

In a nutshell, this perspective on behaviour and governance is (also) an important part of a critical re-reading of existing empirical findings, which then leads to my own new analyses, arguments and conclusions. This is in accordance with what is often referred to as a “review” in specialist journals, but in the present case with interpretations and conclusions that are much more strongly elaborated and translated into theory. A more one-sided version of combined behavioural and governance research is the so-called economic analysis of law (or Law and Economics and Public Choice Research: see Mathis 2009, for example). It also intends to provide governance options (and substance for the interpretation of existing law). However, its behavioural approach is less broad, and there are major objections to the cost-benefit analysis it also contains (as a way of determining targets), albeit other objections than those most common in general and among lawyers in particular (Chaps. 3.1 and 3.9).

The Relation of Law and Ethics – Why Ethics “Apart” from Law Will Not Work

In a transdisciplinary work on sustainability, the next step is to explain how law and ethics can be approached methodically, what is meant by methods of legal interpretation and how law and ethics (or the theory of justice) relate to one another in general. An opinion on the methodology of ethics and legal interpretation must first consider their relationship to one another. The basic norms of law, like ethics, result in a system of a basic social order which is conceived as fair, but with a higher degree of concreteness and underpinned by sanctions. With regard to justice, this book offers at the same time a new ethical approach and a reinterpretation of liberal-democratic – national and transnational – constitutional principles under the auspices of sustainability (Chap. 3; on the reasons for this in the following). At its core, this will be a further developed ethical and legal theory of human rights and democracy, including its intertemporal and global (i.e. sustainability-related) dimension.

The concreteness and sanctions of the law make the written constitution (including human rights) and its interpretation the main basis from which normative sustainability goals are to be derived. Nevertheless, the pure constitutional interpretation of principles such as freedom, human dignity etc. in the perspective of sustainability cannot replace the theory of justice – for several reasons:

- In order to substantiate the justice of a constitution (national, European or, to some extent, global) and the individual laws that fill it, one needs a criterion that itself cannot also originate from the constitution; otherwise the argument becomes circular. The theory of justice (or ethics) as a search for the objectively correct basic order therefore attempts to offer the reason of law presupposed in the assertion of the rightness of a constitution.
- The theory of justice offers that reason of law, in particular by justifying the fundamental concepts of liberal-democratic constitutions: human dignity and impartiality, which have no further “reason” within the law (Chap. 3.1) and at the same time clarify the content, which facilitates the interpretation of further central legal principles such as freedom, democracy and the balance of powers (Chap. 3.2). Even where those principles are not legally standardised in a state and no international treaties have been signed either, they can, as we will see, shape the respective legal system through the ethically founded idea of general principles of international law (Chap. 3.4).
- A constitution can thus be measured by justice as a yardstick (recognisable and therefore not by simple legal setting or vague incantations of past injustices replaceable – for which one would again need a criterion). It will become clear later (Chap. 3) that the constitutional statements and the general theory of justice can be aligned by appropriate constitutional interpretation. The respective constitution is written down, further concretised and at the same time sanctioned in simple law, which on the one hand is the control instrument of politics, and on the other hand as a legislative resolution imposes on the authorities and courts a concept of justice, which provides essential further concretisation of justice. This is done in a way that the framework order “constitution” provides scope for consideration (within which every decision would be “just”) as well as the institutions justly appointed to fill it – and the respective concrete control instrument, “concretely records” the legislative result of this consideration and at the same time reinforces it with sanctions against the individual citizen. Mind you, it is all about normativity, not about anthropology or factual cultural backgrounds (distinction genesis versus validity; because of the empiristic basic orientation this is often misjudged especially in the Anglo-Saxon region; exemplarily Ekins 2014 and Albert 1993).
- Law is always at least an attempt to concretize some subjective idea of justice (or its scope) and to reinforce its observance with sanctions; however, it may not always correspond to objective justice (on objective versus subjective see Chap. 1.6). Law can violate its constitutional framework, constitutions can be unfair, and politics can also violate the respective legal framework; then there is illegal, unjust or unconstitutional politics, but still politics, as for example Nazi politics

and Nazi law were certainly politics and law, but contentwise catastrophic politics and catastrophic law. The question whether unjust law may be called law confuses definition and content.

- No matter ones understanding of justice in terms of content (see Chap. 3.1), justice requires in any case its own concretisation and sanctioning and thus the existence of law. The more complex issues of justice become, the more complex the law potentially becomes (on law as a special case of ethics Alexy 1991, 1995; see also Simmonds 2010).
- Ethical discourse can also learn from legal discourse, which often provides more detailed arguments that can also stimulate ethical reasoning. However, these are “only” suggestions that the ethical discourse itself could actually come up with.
- The objection that normative statements are not needed would be wrong in all this. For anyone who says this presupposes that it has already been clarified in some way what human coexistence should look like (because without normative yardstick one cannot talk about sustainability strategies, political instruments and conditions of transformation). However, exactly this would then again be a (hidden) normative theory.

If one ignores these correlations, a major problem arises that disciplinary ethics largely ignores (and also cost-benefit analysis as a hidden normative theory; see Chaps. 3.1 and 3.9): Any ethics that wants to commit politics has the problem that the constitutional law of the respective political unit, like world, EU, nation state, community, claims to determine exclusively what politics may and must do, i.e. where its obligations and its scope lie. Beyond the concrete, but also limited contexts just described, ethics cannot simply prescribe a competing normativity to law. It may review the basic principles of law (and thus, in the worst case, prove invalid), but it cannot simply stand alongside the law in general. Otherwise one would end up exactly where Hobbes landed in the seventeenth century: Hobbes (1651) feared the sheer civil war on the basis of competing normative views; if one allowed this, the law would ultimately lose its meaning. Hobbes’ answer to this problem was ultimately to adopt ethics in favour of law. Neither this is convincing as we will discuss later (Chap. 3.1), nor are competing normativities convincing, especially since they would undermine key principles of justice (Chap. 3.2) such as legal security and the protection of an elementary precondition of freedom: peace. Another argument against it is that ethics cannot achieve the necessary concreteness beyond fundamental questions to compete with law (see Chaps. 3.1 and 3.2). It only reaches the level of general constitutional statements, but not of judgements in individual cases. Therefore, the role of ethics or the theory of justice is very important, but necessarily limited to the points mentioned. Therefore, even in legal arguments, it is not an option to add external arguments to the discourse on legal interpretation with ethical perspectives; ethics can interpret the law, but cannot replace it. It is true that questions of legal interpretation are also controversial. Nevertheless, the practical relevance, the restriction of the possible spectrum of opinions and a decision-making mechanism for disputes in the form of a democracy with balance of powers are relatively clear with regard to the law.

Methodology of Ethical Argumentation and Legal Interpretation – Misunderstandings About the Role of the Courts

But how does ethics and the theory of justice work methodologically? Methods aimed at empirical data collection are obviously inappropriate. For example, if one empirically gathers moral judgements, this is (descriptive) moral sociology, but not (normative) ethics. Finally, ethics deals methodologically with the correct argumentation and the correct use of logic, of course also in confrontation with arguments already developed by other authors etc.; the further illustrative examples in Chap. 3 will help to clarify this.

What is the method of legal interpretation? (on the following Alexy 1991; Klatt 2008; Susnjar 2010; Ekardt 2016). The legal interpretation activity can lead to a normativity alongside ethics (but, as long as the legal foundations are not unfair, not to a competing one). The legal interpretation is also related to governance research, because it helps to clarify the content of the (almost always legal) policy instruments. It has already become clear (in Chap. 1.6) that linguistic aspects are basically accessible for precise treatment and thus a rational interpretation of the law is possible in principle. On closer inspection, however, there are some things to consider, which is also connected with the point that the legal interpretation does not focus on an empirical study of the use of a word, but rather on the overall view of all potentially relevant normative (!) regulations for a concrete case (Alexy 1985, 1991). It is therefore necessary not only to interpret a legal wording, but also to determine the meaning of normative standards in their systematic position to each other (grammatical and systematic interpretation). Even the grammatically ascertainable wording of the law and its limits can only be determined in a, frequently complex, argument, not in an empirical experiment. At the same time, however, the wording limit in the sense of a separation between “correct” and “incorrect” interpretation of a standard with the regular legal dispute about the “correct” interpretation of a standard in each case is logically imperative. For as soon as there is a dispute about the correct or incorrect interpretation of a law, it is logically presupposed that a correct interpretation can be distinguished from a wrong interpretation of laws, which is only conceivable on the premise that the wording of the law can then be rationally grasped and discussed (Klatt 2008; Alexy 1991; Ekardt 2016; more closely on ethical foundations Chap. 3.1). The fact that also fact-finding is objectively and rationally possible has already been discussed (Chap. 1.6).

Despite these specifications, further contouring of the interpretation of the law is also desirable for a book on sustainability issues. For this reason, I explicitly agree with the view usually taken in legal discourse that laws must not only be interpreted in terms of their wording and systematic relationship to other norms, but also in terms of their objective meaning and purpose. The content of a standard can thus be clarified more precisely. Governance research on sustainability is then helpful in determining the governance effect of a standard. At the same time, there is also the possibility of making the legislative intentions more effective. This is also important because in a power-sharing democracy the law is (de facto and normative) a

work-sharing process of concretisation of the law between legislature, executive and judiciary, which is integrating the normative ideas and arguments of all three powers (Alexy 1991; Klatt 2008; Ekardt 2001).

However, the law (e.g. of sustainability) “is” not the respective interpretation by certain authorities, courts or majorities. Even de facto prevailing interpretations of law can be wrong. The distinction objective versus subjective also arises here – between what is objectively right and what one subjectively considers to be right. And, for example, in liberal democracies that follow no case law (in contrast to UK and USA) a court ruling that uses a certain standard interpretation is only partially binding for the authorities and not at all for the large number of citizens, even if it is correct. Even where this is regulated differently in exceptional cases – for example for some (not all) constitutional court judgments in Germany – this has only the content that a law is prohibited by the court in a very concrete formulation. Thus again, only a concrete constellation is conclusively clarified in court. However, existing judgments, as well as “previous practice” or “majorities” in legislation, can then be the decisive factor in a legal question that is now too decisive, provided that several solutions can be well justified and are therefore rational. For reasons of legal certainty and the distribution of the burden of argumentation alone, a rule is needed in the event that no arguments are put forward against the previous legal opinion and a decision rule for several possible decisions. Such institutional rules for resolving open questions are part of the doctrine of the balance of powers, which in turn follows the basic principles of liberal democracy (Chap. 3.6). For the sake of liberal democracy, even a judgement by which, for example, a court exceeds its authority to concretise, i.e. decides unlawfully/unjustly, should (in most cases) find recognition, since the alternative would be even less freedom-friendly: it would ultimately be a kind of anarchy that is to be excluded by the aforementioned avoidance of competing normativities. However, the term natural law instead of the theory of justice should of course be avoided, since it implies a derivability of norms from descriptive anthropology (distinction of is and ought).

Chapters 1.6 and 1.7 have developed some crucial definitions, distinctions, rationality levels and methods for the sustainability discourse – especially an alternative approach to behavioural research and multi-methodological qualitative governance analysis, as well as a clearer perspective on law based on ethics, but not beside a free-floating ethics. Subsequently, a surprise can be expected, which one encounters more often in this respect. It may be astonishing for some that I am not following automatically some rather sacrosanct preconceptions of a discipline or sub-discipline or school. Keywords such as “environmental economics”, “criticism of capitalism”, “sociological view”, “feminism”, “Rawls” or “methodological individualism” are deliberately largely avoided in this book, although their views (and criticism of them) are present in various places. This relative abstinence is due to the fact that such fixed schools of thought are often criticised in this book (and generally -isms are avoided as much as possible). Furthermore, such rather schematic categories are a rich source of misunderstanding.

Repetition Questions

1. Which definition of sustainability is convincing, and what are the problems with the three-pillar model? (Chap. 1.5)
2. What are the major environmental challenges, which are their main drivers, and why? (Chaps. 1.2 and 1.3)
3. To what extent are the occidental states an ecological pioneer or not at all? (Chaps. 1.2 and 1.3)
4. What are the three fundamental sustainability strategies, how do they differ, and for what reasons could purely technical strategies reach their limits? (Chap. 1.3)
5. To what extent is population growth relevant and why is it often overestimated? (Chaps. 1.2 and 1.4)
6. Where does economic growth as a paradigm reach its limits, what is meant by post-growth, and to what extent does post-growth in turn create problems? (Chap. 1.4)
7. Which are the basic epistemological distinctions, how is constructivism plausible and how does it err? (Chap. 1.6)
8. Why can the possibility of objective truth not be denied in epistemology, and what different forms of rationality or reason exist? (Chap. 1.6)
9. What is meant by environmental humanities and transdisciplinarity and to what extent is transdisciplinarity necessary? (Preface, Chaps. 1.1 and 1.7)
10. How does multi-methodological qualitative behavioural and governance research work, which are the flaws of empiricism, and what rules of legal interpretation exist? (Chaps. 1.6 and 1.7)

Bibliography¹

- Abson, David/Fischer, Joern/ Leventon, Julia et al.: Leverage points for sustainability transformation, *Ambio* 2017, pp. 30 et seq.
- Acemoglu, Daron/ Robinson, James: *Why Nations Fail. The Origins of Power, Prosperity and Poverty*, London 2012.
- Acworth, William et al.: *Emissions Trading and the Role of a Long Run Carbon Price Signal: Achieving cost effective emission reductions under an Emissions Trading System*, Berlin 2017.
- Albert, Hans: *Rechtswissenschaft als Realwissenschaft. Das Recht als soziale Tatsache und die Aufgabe der Jurisprudenz*, Baden-Baden 1993.
- Alexander, Samuel: The optimal material threshold – Towards an economics of sufficiency, in: *Real World Economics Review* 61/ 2012.
- Alexy, Robert: *Recht, Vernunft, Diskurs*, Frankfurt a.M. 1995.
- Alexy, Robert: *Theorie der juristischen Argumentation*, 2nd ed. Frankfurt a.M. 1991.

¹In accordance with legal practice, parliamentary, governmental and EU Commission documents as well as laws and judgments are not listed in the bibliography, as they can be found unequivocally on the basis of the reference given in the continuous text or via the general search engines. The last access date for all internet sources is 31/07/2018.

- Anderson, Kevin: Duality in Climate Science, *Nature* 2015, pp. 898 et seq.
- Appel, Ivo: Staatliche Zukunfts- und Entwicklungsvorsorge, Tübingen 2005.
- Baer, Susanne: Demographischer Wandel und Generationengerechtigkeit, Veröffentlichungen der Vereinigung der deutschen Staatsrechtslehrer 2009, pp. 290 et seq.
- Bailey, Ian: Neoliberalism, climate governance and the scalar politics of EU emissions trading, *Area* 2007, pp. 431 et seq.
- Baumert, Kevin A./ Herzog, Timothy/ Pershing, Jonathan: Navigating the Numbers – Greenhouse Gas Data and International Climate Policy, World Resource Institute 2005.
- Beck, Ulrich: Risikogesellschaft. Auf dem Weg in eine andere Moderne, Frankfurt a.M. 1986.
- Becker, Benjamin/ Richter, Caspar: Klimaschutz in Deutschland – Realität oder Rhetorik?, *Momentum Quarterly* 2015, pp. 3 et seq.
- Berger, Peter/ Luckmann, Thomas: The social construction of reality, London 1966.
- Biermann, Frank et al.: Earth System Governance. Science and Implementation Plan of the Earth System Governance Project, IHDP-Report No. 20, Bonn 2009.
- Bösche, Eyk/ Ponder, Anika Nicolaas/ Thomas, Henning: Power to Gas. The Legal Framework for a Long-Term Energy Storage Technology in Germany, *Renewable Energy Law and Policy* 2012, pp. 159 et seq.
- Bosselmann, Klaus: The Principle of Sustainability. Transforming Law and Governance, 2nd ed. London 2016.
- von Bredow, Hartwig: Energieeffizienz als Rechts- und Steuerungsproblem. Unter besonderer Berücksichtigung der erneuerbaren Energien, Marburg 2013.
- Broome, John: Counting the Cost of Global Warming, Cambridge 1991.
- Burtraw, Dallas/ Sterner, Thomas: Climate Change Abatement: Not „Stern“ Enough?, 2009, http://www.rff.org/Publications/WPC/Pages/09_04_06_Climate_Change_Abatement.aspx.
- Byatt, Ian et al.: The Stern Review: A Dual Critique. Part II. Economic Aspects, *World Economics* 2006, pp. 199 et seq.
- Carolan, Michael: Cheaponomics. Warum billig zu teuer ist, München 2015.
- Chancel, Lucas/ Piketty, Thomas: Carbon and Inequality – from Kyoto to Paris, 2015, <http://piketty.pse.ens.fr/files/ChancelPiketty2015.pdf>.
- Cordell, Dana/ Drangert, Jan-Olof / White, Stuart: The story of phosphorus: Global food security and food for thought, *Global Environmental Change* 2009a, pp. 292 et seq.
- Cordell, Dana et al.: Preferred future phosphorus scenarios: A framework for meeting long-term phosphorus needs for global food demand, International Conference on Nutrient Recovery from Waste Water Streams, Sydney 2009b.
- Cordonier Segger, Marie Claire: Sustainable Development in International Law, in: Bugge, Hans Christian/ Voigt, Christina (Ed.): Sustainable Development in International and National Law, Groningen 2008, pp. 87 et seq.
- Crutzen, Paul/ Waclawek, Stanislaw: Atmospheric Chemistry and Climate in the Anthropocene, *Chemistry-Didactics-Ecology-Metrology* 2015, pp. 9 et seq.
- Daly, Herman: Beyond Growth. The Economics of Sustainable Development, Boston 1996.
- Damasio, Antonio: Descartes' Error. Emotion, Reason, and the Human Brain, London 2006.
- Deaton, Angus: The Great Escape. Health, Wealth, and the Origins of Inequality, Princeton 2013.
- De-Shalit, A.: Why posterity matters, Abingdon 2005.
- Diamond, Jared: Collapse. How Societies Choose to Fail or Succeed, London 2005.
- Droste-Frank, Bert et al.: Improving Energy Decisions. Towards Better Scientific Policy Advice for a Safe and Secure Future Energy System, Heidelberg 2015.
- Edenhofer, Ottmar/ Kadner, Susanne/ Minx, Jan: Ist das Zwei-Grad-Ziel wünschenswert, und ist es noch erreichbar? Der Beitrag der Wissenschaft zu einer politischen Debatte, in: Marotzke, Jochem/ Stratmann, Martin (Ed.): Die Zukunft des Klimas. Neue Erkenntnisse, neue Herausforderungen, München 2015, S. 69 et seq.
- EEAC: Safe Operating Space. Conclusions Report, Barcelona 2014.
- Ekardt, Felix: Economic Evaluation, Cost-Benefit Analysis, Economic Ethics: A Critique with Regard to Climate Economics - about Figures in the Sustainability Discourse, Dordrecht 2019, in print.

- Ekardt, Felix/ Wieding, Jutta/ Zorn, Anika: Paris Agreement, Precautionary Principle and Human Rights: Zero Emissions in Two Decades?, *Sustainability* 2018a, pp. 2812 et seq.
- Ekardt, Felix/ Wieding, Jutta/ Garske, Beatrice/ Stubenrauch, Jessica: Agriculture-related climate policies – law and governance issues on European and global level, *CCLR* 2018b, Issue 4.
- Ekardt, Felix: Auf der Suche nach dem verlorenen Sinn, *ZEIT* 19/ 04/ 2018.
- Ekardt, Felix: Kurzschluss. Wie einfache Wahrheiten die Demokratie untergraben, Berlin 2017.
- Ekardt, Felix: Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel, 3rd ed. (= 2nd ed. der Neuausgabe) Baden-Baden 2016.
- Ekardt, Felix/ Wieding, Jutta/ Henkel, Marianne: Climate Justice 2015 – BUNDposition, Berlin 2015a.
- Ekardt, Felix/ Klinski, Stefan/ Schomerus, Thomas: Konzept zur Fortentwicklung des deutschen Klimaschutzrechts, Marburg 2015b.
- Ekardt, Felix/ Garske, Beatrice/ Stubenrauch, Jessica/ Wieding, Jutta: Legal Instruments for Phosphorus Supply Security – Integrated Instruments for Various Environmental Problems, *JEEPL* 2015c, pp. 343 et seq.
- Ekardt, Felix/ Neumann, Werner/ Wieding, Jutta/ Schmidt-Kanefendt, Hans-Heinrich: Grundlagen und Konzepte einer Energiewende 2050 – BUNDposition, Berlin 2015d.
- Ekardt, Felix/ van Riesten, Hilke/ Hennig, Bettina: CCS als Governance- und Rechtsproblem, *ZfU* 2011a, 409 et seq.
- Ekardt, Felix/ Hennig, Bettina/ von Bredow, Hartwig: Land use, climate change and emissions trading. European and international legal aspects of the post-Kyoto process, *Carbon & Climate Law Review* 2011b, pp. 371 et seq.
- Ekardt, Felix/ von Bredow, Hartwig: Managing the Ecological and Social Ambivalences of Bioenergy – Sustainability Criteria versus Extended Carbon Markets, in: Leal, Walter (Ed.): *The Economic, Social, and Political Aspects of Climate Change*, Berlin 2010, pp. 455 et seq.
- Ekardt, Felix: Steuerungsdefizite im Umweltrecht: Ursachen unter besonderer Berücksichtigung des Naturschutzrechts und der Grundrechte. Zugleich zur Relevanz religiösen Säkularisats im öffentlichen Recht, Sinzheim 2001.
- Ekins, Richard: Facts, Reasons and Joint Action: Thoughts on the Social Ontology of Law, *Rechtstheorie* 2014, pp. 313 et seq.
- Enquete Commission „Wachstum, Wohlstand, Lebensqualität“ des 17. Deutschen Bundestages: Schlussbericht, 2013, BT-Drs. 17/ 13300.
- Exner, Anne-Katrin: Clean Development Mechanism und alternative Klimaschutzansätze. Rechts- und Governancefragen, Marburg 2016.
- FAO: World Agriculture towards 2030/ 2050. The 2012 Revision, 2012, <http://www.fao.org/docrep/016/ap106e/ap106e.pdf>.
- Fazey, Ioan et al.: Ten essentials for action-oriented and second order energy transitions, transformations and climate change research, *Energy Research and Social Science* 2018, pp. 54 et seq.
- Fischer, Corinna/ Griefßhammer, Rainer et al.: Mehr als nur weniger. Suffizienz – Begriff, Begründung und Potenziale, Freiburg 2013, <http://www.oeko.de/oekodoc/1836/2013-505-de.pdf>.
- Foucault, Michel: *History of Madness*. New York 2006.
- Friedrich, Jürgen: *International Environmental „Soft Law“*, Heidelberg 2013.
- Fücks, Ralf: *Intelligent wachsen. Die grüne Revolution*, München 2013.
- Ganteför, Gerd: *A Provocative Thesis: Oil, Coal and Uranium Are Indispensable Energy Sources for the Poor Countries*, Analyse & Kritik 2010, pp. 5 et seq.
- Garrett, Tim: Are there basic physical constraints on future anthropogenic emissions of carbon dioxide?, 2009, <http://www.met.utah.edu/tgarrett/>.
- Gewirth, Alan: *Reason and Morality*, Chicago 1978.
- Giegerich, Thomas: *Europäische Verfassung und deutsche Verfassung im transnationalen Konstitutionalisierungsprozeß – wechselseitige Rezeption, konstitutionelle Evolution und föderale Verflechtung*, Berlin 2003.
- Gilbert, Natasha: *The Disappearing Nutrient*, *Nature* 2009, pp. 716 et seq.

- Giljum, Stefan/ Hinterberger, Friedrich: The Limits of Resource Use and Their Economic and Policy Implications, in: Angrick, Michael/ Burger, Andreas/ Lehmann, Harry (Ed.): Factor X. Policy, Strategies and Instruments for a Sustainable Resource Use, Dordrecht 2014, pp. 3 et seq.
- Global Commission on the Economy and Climate: Better Growth – Better Climate, 2015, <http://newclimateeconomy.report/>.
- Gordon, Robert: The Rise and Fall of American Growth, Princeton 2016.
- Gough, Ian: Heat, Greed and Human Need. Climate Change, Capitalism and Sustainable Wellbeing, Cheltenham 2017.
- Haberl, Helmut/ Erb, Karl-Heinz: Assessment of Sustainable Land Use in Producing Biomass, in: Dewulf, John/ Langenhove, Herman V. (Ed.): Renewables-Based Technology: Sustainability Assessment, London 2006, pp. 176 et seq.
- Habermas, Jürgen: Diskursethik, Philosophische Texte Bd. 3, Frankfurt a.M. 2009.
- Habermas, Jürgen: Faktizität und Geltung, Frankfurt a.M. 1992.
- Habermas, Jürgen: Theorie des kommunikativen Handelns, 2 vol., Frankfurt a.M. 1981.
- Habermas, Jürgen: Wahrheit und Rechtfertigung, Frankfurt a.M. 1999.
- Hamann, Hanjo: Evidenzbasierte Jurisprudenz. Methoden empirischer Forschung und ihr Erkenntniswert für das Recht am Beispiel des Gesellschaftsrechts, Tübingen 2014.
- Handrich, Lars/ Kemfert, Claudia et al.: Turning Point: Decoupling Greenhouse Gas Emissions from Economic Growth, Berlin 2015.
- Hansen, James E.: Environmental Research Letters, Scientific Reticence and Sea Level Rise No. 2/ 2007, http://www.iop.org/EJ/article/1748-9326/2/2/024002/erl7_2_024002.html.
- Hehn, Nina: Postfossile Stadtentwicklung. Rechts- und Steuerungsprobleme einer Umsetzung kommunaler Energiewende- und Klimaschutzkonzepte im Rahmen der Stadtplanung, Marburg 2015.
- Helm, Dieter: Climate-Change Policy: Why Has so Little Been Achieved?, Oxford Review of Economic Policy 2008, 24 et seq.
- Hennig, Bettina: Nachhaltige Landnutzung und Bioenergie. Ambivalenzen, Governance, Rechtsfragen, Marburg 2017.
- Herrmann, Ulrike: Der Sieg des Kapitals. Wie der Reichtum in die Welt kam – die Geschichte von Wachstum, Geld und Krisen, München 2015.
- Herrmann-Pillath, Carsten: Constitutive Explanations as Methodological Framework for Integrating Thermodynamics and Economics, Entropy 2016, pp. 18 et seq.
- Herrmann-Pillath, Carsten: Energy, rowth and evolution. Towards a naturalistic ontology of economics, Ecological Economics 2015, pp. 432 et seq.
- Heyen, Dirk Arne/ Fischer, Corinna et al.: Mehr als nur weniger. Suffizienz – Notwendigkeit und Optionen politischer Gestaltung, Freiburg 2013, <http://www.oeko.de/oekodoc/1837/2013-506-de.pdf>.
- Hobbes, Thomas: De Homine, Opera Philosophica, Neudruck Aalen 1966.
- Hoffmann, Ulrich: Can Green Growth really Work – and what are the True (Socio-)Economics of Climate Change?, Berlin 2015.
- Höhne, Niklas/ Kuramochi, Takeshi/ Sterl, Sebastian/ Röschel, Lina: Was bedeutet das Pariser Abkommen für den Klimaschutz in Deutschland?, Köln 2016, https://newclimateinstitute.files.wordpress.com/2016/02/160222_klimaschutz_paris_studie_02_2016_fin_neu1.pdf.
- Hulme, Mike: Why We Disagree About Climate Change, Cambridge 2009.
- International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD): Global Summary for Decision Makers, Johannesburg 2008.
- International Monetary Fund (IMF): How large are global energy subsidies?, 2015, <https://www.imf.org/external/pubs/ft/wp/2015/wp15105.pdf>.
- IPCC (Intergovernmental Panel on Climate Change): Climate Change 2014, Fifth Assessment Report, Cambridge 2014.
- IPCC: Global Warming of 1.5 Degrees Celsius, Special Report, Cambridge 2018.
- IPCC: Climate Change 2007. Fourth Assessment Report, Cambridge 2007.

- Ismer, Roland: Klimaschutz als Rechtsproblem. Steuerung durch Preisinstrumente vor dem Hintergrund einer parallelen Evolution von Klimaschutzregimes verschiedener Staaten, Tübingen 2014.
- Jackson, Tim: Prosperity without Growth, London 2009.
- Jacobson, Mark/ Delucchi, Mark: Providing all Global Energy with Wind, Water, and Solar Power, Energy Policy 2011, pp. 1154 et seq.
- Jakob, Michael/ Edenhofer, Ottmar: Growth, Degrowth, and the Commons, Oxford Review of Economic Policy 2014, 447 et seq.
- Juerges, Nataly/ Newig, Jens: What role for frames in scalar conflicts?, Land Use Policy 2015, pp. 426 et seq.
- Kellerwessel, Wulf: Normenbegründung in der Analytischen Ethik, Würzburg 2003.
- Kelsen, Hans: Was ist Gerechtigkeit?, Stuttgart 2000.
- Kim, Rakhyun/ Bosselmann, Klaus: Operationalizing Sustainable Development: Ecological Integrity as a Grundnorm of International Law, Review of European, Comparative and International Environmental Law 2015, pp. 194 et seq.
- Kivimaa, Paula et al.: Experiments in Climate Governance – Lessons from a Systematic Review of Case Studies in Transition Research, SPRU Working Paper Series, Sussex 2015.
- Klatt, Matthias: Making the law explicit: The normativity of legal argumentation, London 2008.
- Klein, Naomi: This Changes Everything. Capitalism versus The Climate, New York 2014.
- Klinsky, Sonja/ Mehling, Michael/ Tuerk, Andreas: Beyond Déjà Vu. Opportunities for Policy Learning from Emissions Trading in Developed Countries, Carbon & Climate Law Review 2012, pp. 291 et seq.
- Kuckartz, Udo: Mixed Methods, Wiesbaden 2014.
- Lang, Daniel/ Rode, Horst/ von Wehrden, Henrik: Methoden und Methodologie in den Nachhaltigkeitswissenschaften, in: Heinrichs, Harald/ Michelsen, Gerd (Ed.): Nachhaltigkeitswissenschaften, Heidelberg 2014, pp. 115 et seq.
- Leclère, David et al.: Climate change induced transformations of agricultural systems. Insights from a global model, Environmental Research Letters 2014, 134018.
- Lohmann, Larry: Climate Crisis – Social Science Crisis, in: Voss, Martin (Ed.): Der Klimawandel. Sozialwissenschaftliche Perspektiven, Wiesbaden 2010, pp. 133 et seq.
- Löfstedt, Ragnar: A possible way forward for evidence-based and risk-informed policy-making in Europe: a personal view, Journal of Risk Research 2014, pp. 1089 et seq.
- Lomborg, Björn: Cool it! The Skeptical Environmentalist's Guide to Global Warming, München 2007.
- Luhmann, Niklas: Das Recht der Gesellschaft, Frankfurt a.M. 1993.
- Machol, Ben/ Rizk, Sarah: Economic value of U.S. fossil fuel electricity health impacts, Environment International 2013, pp. 75 et seq.
- Malinowski, Bronislaw: Argonauts of the western pacific. An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea, 2nd ed. London 1932.
- Marotzke, Jochem: Vorhersagen sind schwierig – Möglichkeiten und Grenzen von Klimamodellen, in: Marotzke, Jochem/ Stratmann, Martin (Ed.): Die Zukunft des Klimas. Neue Erkenntnisse, neue Herausforderungen, München 2015, pp. 9 et seq.
- Mathis, Klaus: Efficiency instead of Justice? Searching for the Philosophical Foundations of the Economic Analysis of Law, Berlin 2009.
- Meadows, Dennis L./ Meadows, Donella H./ Randers, Jørgen/ Behrens, William W.: The Limits to Growth, Hannover 1972.
- Milgram, Stanley: Obedience to Authority. An Experimental View, New York 1974.
- Milinski, Manfred/ Marotzke, Jochem: Das Klimaspiel. Warum scheitern Klimaverhandlungen?, in: Marotzke, Jochem/ Stratmann, Martin (Ed.): Die Zukunft des Klimas. Neue Erkenntnisse, neue Herausforderungen, München 2015, pp. 93 et seq.
- Moreno, Camila/ Speich Chassé, Daniel/ Fuhr, Lili: Carbon Metrics. Global Abstractions and Ecological Epistemicide, Berlin 2015, https://www.boell.de/sites/default/files/2015-11-09_carbon_metrics.pdf.
- Muraca, Barbara: Gut leben. Eine Gesellschaft jenseits des Wachstums, Bonn 2015.

- Newig, Jens et al.: Exploring Governance Learning, Environmental Science and Policy 2015, pp. 353 et seq.
- Nkonya, Ephraim/ Mirzabaev, Alisher/ von Braun, Joachim (Ed.): Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development, Berlin 2016.
- Nonhebel, Sabine: Renewable energy and food supply: will there be enough land?, Renewable and Sustainable Energy Reviews 2004, pp. 191 et seq.
- Nordhaus, William: A Question of Balance. Weighing the Options on Global Warming Policies, New Haven 2008.
- Nowak, Martin/ Highfield, Roger: Kooperative Intelligenz. Das Erfolgsgeheimnis der Evolution, München 2013.
- OECD: How's Life? Measuring Wellbeing, Paris 2015.
- OECD: Biofuels: Linking Support To Performance, 2008.
- Ott, Konrad: Institutionalizing Strong Sustainability. A Rawlsian Perspective, Sustainability 2014, pp. 894 et seq.
- Ott, Konrad/ Döring, Ralf: Theorie und Praxis starker Nachhaltigkeit, Marburg 2004.
- Paech, Niko: Liberation From Excess, München 2012.
- Parry, Martin et al.: Assessing the costs of adaptation to climate change: a review of the UNFCCC and other recent estimates, 2009, <http://www.iied.org/climate-change/key-issues/economics-and-equity-adaptation/costs-adapting-climate-change-significantly-under-estimated>.
- Peters, Glen/ Minx, Jan/ Weber, Christopher/ Edenhofer, Ottmar: Growth in emission transfers via international trade from 1990 to 2008, PNAS 2011, pp. 8903 et seq.
- Philippopoulos-Mihalopoulos, Andreas/ Brooks, Victoria (Ed.): Research Methods in Environmental Law. A Handbook, Cheltenham 2017.
- Piketty, Thomas: Capital in the 21st Century, Harvard 2014.
- Rawls, John: A Theory of Justice, Cambridge/ Mass. 1971.
- Roberts, Timmons/ Parks, Bradley: A Climate of Injustice. Global Inequality, North-South Politics, and Climate Policy, Cambridge/ Mass. 2007.
- Rockström, Johan et al.: A Safe Operating Space for Nature, Nature 2009, pp. 472 et seq.
- Romppanen, Seita: The EU's Biofuels – Certified as Sustainable?, RELP 2012, pp. 173 et seq.
- Rorty, Richard: Contingency, Irony, and Solidarity, Cambridge 1989.
- Rosillo-Calle, Frank/ de Groot, Peter/ Hemstock, Sarah L./ Woods, Jeremy (Ed.): The Biomass Assessment Handbook. Bioenergy for a Sustainable Environment, Basingstoke 2007.
- Russell-Smith, Jeremy/ Costanza, Robert et al.: Moving beyond evidence-free environmental policy, Frontiers in Ecology and Environment 2015, pp. 441 et seq.
- Santarius, Tilman: Der Rebound-Effekt. Ökonomische, psychische und soziale Herausforderungen für die Entkopplung von Wirtschaftswachstum und Energieverbrauch, Marburg 2015.
- Schäpke, Niko et al.: Creating Space for Change: Real-world Laboratories for Sustainability Transformations, GAIA 2015, pp. 281 et seq.
- Scheidler, Fabian: Das Ende der Megamaschine. Geschichte einer scheiternden Zivilisation, Wien 2015.
- Schellnhuber, Hans Joachim: Selbstverbrennung. Die fatale Dreiecksbeziehung zwischen Klima, Mensch und Kohlenstoff, München 2015.
- Schmid, Eva/ Knopf, Brigitte/ Pechan, Anna: Putting an energy system transformation into practice: The case of the German Energiewende, Energy Research & Social Science 2016, pp. 263 et seq.
- Schmidt-Bleek, Friedrich: Green lies. Nothing for the environment, everything for business – how politics and industry are ruining the world, München 2014.
- Schneider, Lambert/ Lazarus, Michael/ Kollmuss, Anja: Industrial N₂O Projects Under the CDM: Adipic Acid. A Case of Carbon Leakage?, Stockholm 2010.
- Schneidewind, Uwe: Nachhaltige Wissenschaft. Plädoyer für einen Klimawandel im deutschen Wissenschafts- und Hochschulsystem, Marburg 2009.
- Scholz, Roland et al.: Transdisciplinary case studies as a means of sustainability learning, International Journal of Sustainability in Higher Education 2006, pp. 226 et seq.

- Scholz, Roland: *Environmental Literacy in Science and Society. From Knowledge to Decisions*, Cambridge 2011.
- Schubert, Christian: Mehr Psychologie wagen. Warum eine psychologisch informierte VWL gute Argumente gegen staatlichen Interventionismus liefert, 2015, <http://wirtschaftlichefreiheit.de/wordpress/?p=18051> (zuletzt abgerufen: 16.05.2016).
- Schulz, Christian/ Bailey, Ian: *The Green Economy and Post-Growth Regimes – Opportunities and Challenges for Economic Geography*, *Geografiska Annaler* 2014, pp. 277 et seq.
- Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook 3*, Montréal 2010.
- Sen, Amartya: *The Idea of Justice*, Harvard 2009.
- Shindell, Drew: The social cost of atmospheric release, *Climatic Change* 2015, pp. 313 et seq.
- Siemer, Stefan: Nachhaltigkeit unterscheiden. Eine systemtheoretische Gegenposition zur liberalen Fundierung der Nachhaltigkeit, in: Ekardt, Felix (Ed.): *Generationengerechtigkeit und Zukunftsfähigkeit. Philosophische, juristische, ökonomische, politologische und theologische Neuansätze in der Umwelt-, Sozial- und Wirtschaftspolitik*, 2006, pp. 129 et seq.
- Simmonds, Nigel: *Law as a Moral Idea*, Cambridge 2010.
- Singer, Peter: *Climate change, eating meat and ending poverty*, Milthorpe Lecture 2009.
- Sinn, Hans-Werner: *Das grüne Paradoxon. Plädoyer für eine illusionsfreie Klimapolitik*, München 2008.
- Sommer, Bernd/ Welzer, Harald: *Transformationsdesign. Wege in eine zukunftsfähige Moderne*, München 2014.
- Stengel, Oliver: *Suffizienz. Die Konsumgesellschaft in der ökologischen Krise*, München 2011.
- Stern, Nicholas: *A Blueprint for a Safer Planet: How to manage Climate Change and create a new Era of Progress and Prosperity*, Cambridge 2009.
- Stern, Nicholas: *Stern Review Final Report*, 2006, abrufbar unter http://www.hm-treasury.gov.uk/stern_review_report.htm.
- Stiglitz, Joseph/ Sen, Amartya/ Fitoussi, Jean-Paul: *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Paris 2009.
- Stoll-Kleemann, Susanne/ O'Riordan, Tim: *The Sustainability Challenges*, *Environment* 3/ 2014, pp. 34 et seq.
- Susnjar, Davor: *Proportionality, Fundamental Rights, and Balance of Powers*, Leiden 2010.
- Sutter, Christoph/ Parreño, Juan Carlos: Does the current Clean Development Mechanism deliver its sustainable development claim? An analysis of officially registered CDM projects, *Climate Change* 2007, pp. 75 et seq.
- Tapia-Fonllem, César/ Corral-Verdugo, Victor/ Fraijo-Sing, Blanca/ Fernanda Durón-Ramos, Maria: *Assessing Sustainable Behavior and its Correlates: A Measure of Pro-Ecological, Frugal, Altruistic and Equitable Actions*, *Sustainability* 2013, pp. 711 et seq.
- Thornhill, Randy/ Palmer, Craig: *A natural history of rape*, Cambridge 2000.
- Tomasello, Michael: *A Natural History of Human Thinking*, Harvard 2017.
- UNEP: *Green Economy Report. A Preview*, New York 2010.
- Unnerstall, Herwig: *Rechte zukünftiger Generationen*, Würzburg 1999.
- Unnerstall, Herwig: *Sustainable Development" as Legal Term in European Community Law: Making It Operable within the Habitats Directive and the Water Framework Directive*, *UFZ-Diskussionspapiere* 16/ 2005, Leipzig 2005, http://www.ufz.de/data/ufz_disk_16_20052878.pdf.
- Voigt-Kleschin, Lieske: *Sustainable Food Consumption? Claims for Sustainable Lifestyles in between Normative and Eudaimonistic Issues – the Example of Food Production and Consumption*, Manuskript, Greifswald 2013.
- von Weizsäcker, Ernst Ulrich: *Factor Five. Transforming the Global Economy through 80 % Improvements in Resource Productivity*, London 2010.
- Wilson, Edward: *The Social Conquest of Earth*, New York 2012.
- World Energy Outlook 2015: *Exekutive Summary*, http://www.iea.org/publications/freepublications/publication/WEO2015_ES_GERMAN.pdf.



Transformation to Sustainability: An Innovative Perspective on Societal Change – With and Against Sociological, Psychological, Biological, Economic and Ethnologic Findings

Abstract

Both the slow transition to new technologies and the lack of behavioural changes need explaining. This will only succeed if the many disciplines contributing to behavioural science (sociology, psychology, sociobiology, economics, ethnology, religious studies, history, etc.) are looked at together to form an overarching theory of individual and collective change. On the road to this transformation research, some fundamental methodological problems must be taken into account (see above). The success or failure of the transformation towards more sustainability, which has essentially failed so far, can be explained, like any social condition, in looking at the complex interaction of individuals. Most important for analysing social change are complex interactions of various actors that culminate in vicious circles e.g. of politicians and voters as well as businesses and consumers. The sole emphasis on factors such as political and economic power or the role of consumers leads to abridging analyses. The complex interaction and vicious circles do not arise primarily from a lack of knowledge about sustainability. The relevance of knowledge to behaviour is widely overestimated and it is overlooked that factual knowledge does not prove normative objectives right or wrong.

Important, but sometimes also overestimated, are the factors of self-interest, path dependencies, problems with collective goods, and values – that assume a person who acts consciously and calculatingly throughout. The irrational and unconscious or semi-conscious factors that influence the behaviour of politicians, entrepreneurs, voters/ consumers, lobbyists, media representatives, etc. are constantly overlooked. Such factors are conceptions of normality (not to be mistaken for values) and emotional factors such as convenience, habits, a lack of orientation in spatio-temporal distance, denial, a lack of thinking in complex causalities, dissonance of talking and acting, striving for recognition, etc.

All these factors are reflected within an individual and as a structure; the dispute over supposedly individualistic versus supposedly collectivist approaches to explaining behaviour and change is proving to be of little consequence. Generally

speaking, having a look at real-life individuals instead of remaining too abstract, makes the real motives more transparent. The emergence of unsustainability can be seen as a prime example of these diverse motivational factors and conditions of social change.

Diagonally to the motivation factors mentioned above, it can be said that a lack of sustainability is based on a mixture of biological, cultural (including economic, e.g. capitalism-related), biographical and external factors. Findings from sociobiology and brain research can contribute to explaining human behaviour; however, neither their radical rejection nor their overestimation proves to be tenable. However, today, we see a historically unique situation of comprehensive danger to human livelihoods as a particular manifestation of self-interest, conceptions of normality, values, etc. This can only be explained by additional consideration of cultural factors. A special cultural aspect is the genesis of modern economics, natural science and technology in a complex interaction with originally religious, today often secularised values. The objection that people were – so the claim – in reality largely cooperative (or, even more so, altruistic) and only became what they are today through capitalism, proves to be crooked. Such an objection is empirically implausible, and it neglects the – in parts – biological nature of humans. In addition, it mixes the analysis of living conditions of today and the more recent past with living conditions of the Stone Age and forgets that sustainability is not about collaboration in a small group of hunter-gatherers but between billions of people that will never know each other. Furthermore, focusing on (the cultural factor of) capitalism neglects that an economic system consists of complex interactions of managers, workers, trade unions, consumers, politicians setting the framework for economic activities, and people voting these politicians into office.

The findings of happiness research cannot serve as an objection either. They show that people can be happy with different levels of material wealth. However, there is no clear evidence that a change towards sustainability per se makes all people happier; nevertheless, the necessary transformation holds potential for happiness. Despite of all non-sustainable developments, however, the freedom- and wealth-creating effects of capitalist economic activity should not be overlooked. Consequently, social change in general and transformation towards sustainability in particular are only possible through the interaction of different actors and by influencing those motivational factors which can at all be influenced. Self-interested economic-political, ethical and eudaemonistic (luck-related) considerations could certainly motivate a genuine behavioural and technological change towards sustainability. But for this, self-interest calculations need to be reconsidered, values revised, knowledge used more strongly, path dependencies altered, problems with collective goods addressed, and above all conceptions of normality transformed. This requires a variety of activities by different actors, ranging from completely different policy approaches to the (not verbal or only occasional) establishment of a new day-to-day behaviour of people. Because of the interdependencies, one actor alone cannot bring about the

sustainability change. Asking for the one and only relevant actor takes the debate to pointless chicken-and-egg games.

Keywords

Economics/economic · Psychology/psychological · Ethnological/ethnology · Biological/biology · Sociological/sociology · Interconnectedness · Micro versus macro · Chicken-and-egg game · Knowledge · Values · Environmental awareness · Self-interest · Evolutionary biology · Neurophysiology · Motivation · Individual factors · Structural factors · Path dependency · Concept(ion) of normality · Emotions · Culture · Environmental history · Protestantism · Capitalism · Politics · Citizens · Interest groups · Cooperation research · Happiness research · Ping-pong

2.1 Complex Interconnectedness of Stakeholders: Overcoming the Distinction of Micro Versus Macro – The Danger of a Chicken-and-Egg Game

The inventory (Chap. 1.2) has shown that established forms of life and economy are not doing well in terms of sustainability. This is true, although, according to the state of scientific knowledge, far-reaching measures would be advisable if certain catastrophic consequences are to be avoided. The sustainability strategies also showed that frugality has to be added to consistency and efficiency, with serious consequences and challenges for the growth society (Chap. 1.3). On the surface, sustainability is simple in the example areas mentioned so far: resource extraction and the use of sinks, e.g. through greenhouse gases, must be drastically reduced, and this has potentially even economic and existential advantages for humanity. Nevertheless, and despite existing, often impressive, technical options and a variety of political, entrepreneurial and civil society measures (more on them in Chap. 4.2), the transformation of technology has so far only succeeded to a limited extent. This applies even more so to changes in behaviour, for example in the fields of nutrition, heat, mobility or electricity. Also, new technology does not implement itself, even if some natural scientists and politicians may assume so. This takes us to the conditions of social change and human motivation.

Some human scientists (e.g. Muñoz-Rubio 2002) might be shocked by the following analysis. For example, my analysis does not recognize constructivism (see Chap. 1.6 for its untenability), is rather critical of Marxism (Chap. 2.6), and also recognizes that behaviour of human beings as a biological beings is partly shaped by our heritage from Stone Age. On the other hand, some biologists and economists (e.g. Wilson 2012) might be disappointed that the cultural side of human beings is strongly emphasized – and that a one-sided and empiricist methodology is avoided. Rather, both the methodology (Chap. 1.7) and the disciplinary approach will be chosen as comprehensively as possible.

Transformation as Core Question of Human Sciences – Integrating All (!) Behavioural Disciplines

Discussing transformation brings us to absolute core questions of human sciences: what drives people? And how is social change possible? In the best transdisciplinary sense, a perspective that radically integrates and transcends the various behavioural sciences is to be gained. It is about the causes of non-sustainability to date – and about the prerequisites and opportunities for a (ultimately global) social transformation towards sustainability (see Ekardt 2016a, 2017a). As already mentioned (in Chap. 1.6), this is a purely descriptive analysis of causes; it does not justify anything normatively, but it also cannot be shaken by the fact that not everyone welcomes it. The so-called governance problems are dealt with later on (in Chap. 4.4), i.e. factors that have to be considered, because even if there was a motivation for sustainability, there would be a need to effectively shape policy instruments. And all of this is not just about understanding superficial events in the outside world that have influenced, for example, the introduction of some political innovation (misjudged, for example, by de Lovinfosse 2008).

To an analysis of the phenomenon of change, which integrates the many behavioural disciplines and at the same time breaks new ground, we will first of all tear down the wall between personal and social processes.

Overcoming the Distinction of Micro Versus Macro

For many it may sound surprising, perhaps even highly irritating, when their everyday problems and world affairs are attributed to a common question, precisely to the pre-conditions of change. Intuitively, you might think: The fact that I have problems in my marriage is due to my difficult childhood. And the fact that Hitler came to power is due to authoritarian, anti-Semitic cultural traditions, a lost war and perhaps still to the world economic crisis after 1929. But could not even National Socialism, however varied and immense its causes may be, have something to do with Hitler's difficult childhood? And cannot a marriage fail because of a global economic crisis? Perhaps it will be possible to say essentially: Who understands the drives of human behaviour, can understand change – who understands individuals, understands societies.

One can see from these examples that the dogmatic distinction between a micro level and a macro level leads into a dead end (with the same tendency for the following aspects: Fücks 2013; Stengel 2011; Santarius 2015; considered in depth at Greve 2015; Habermas 1981; Mead 1934; Giddens 1984). So as not to be misunderstood: There are obviously many differences between the Second World War of the Nazis and my marriage. For example, there are significantly fewer people involved in the latter. However, this does not rule out the possibility that both influence each other, as we already recognised above as a reason for analysing several topics in parallel. And it does not rule out that people always follow the same set of behavioural drives, regardless of whether they are at a supposed micro or rather macro level. This set of behavioural drives, however, could be somewhat

more complicated than many relatively heated debates about the Nazi era, capitalism or brain research suggest.

Unfortunately, with such a thesis one is at risk of being killed in the scientific discourse by an omnipresent box-thinking. Apparently, one has to decide whether one leads social processes back to individuals – or whether one understands society or at least structural parts of society as an independent, collective unit. The fact that this micro-macro comparison does not help is further discussed here using the example of sustainability issues such as climate change by asking ourselves the question: Which actors are involved in social change? Only “politics” together with its legal instruments? Or “the companies”? Or the citizens? Or the lobby groups, the media etc.? Ultimately, climate change and most resource and sink problems can be traced back to many small, seemingly irrelevant actions that most people take every day, especially in the industrialised countries and in the upper classes of emerging economies. Usually this happens without thinking about it, whether it is eating, heating, everyday mobility, planning holidays or even making larger decisions such as choosing a place to live. Theoretically, every inhabitant of the global north could personally and massively advance the climate and energy turnaround every day. I can avoid holiday flights, do without individual motorised transport, minimise my consumption of animal food, heat little and insulate effectively, use energy-efficient products and live in the city centre instead of commuting to the periphery, cover the remaining electricity consumption with climate-friendly and resource-saving wind energy, generally buy less. Houses can be built in a way that they need zero external energy and are still warm in winter. And do I really need all the energy-intensively produced kitchen and entertainment electronics? And also those very energy-intensive greenhouse fruit in winter?

The Crucial Point: The Interaction of Different Actors – And Vicious Circles

However, one could also ask: Why does politics (which, like the citizens and businesses, consists of people with the common human behavioural drives) not force more sustainable forms of life and business? Or why do companies not switch more to sustainable products? This is where the interaction between different actors comes into play. A certain way of doing business always involves customers who constantly buy its products, do not ask about production conditions and find ecologically exemplary products too expensive. On the other side, there are companies that provide or do not provide certain ecologically-friendly offers to customers, provoke a customer’s need for products to increase their sales, thus keeping the spiral of growth and high resource consumption going. However, the interrelationship of the actors is not as simple as ascribed in Marxist tradition to a simple one-sided exploitation and alienation. Production and consumption, however suggestive the offers may be, are not simply forced unilaterally (especially as the gains in freedom of modern societies are experienced by almost all people as pleasant), and many small and larger suppliers and consumers play a role in this – and employees who work for all the companies. This still applies even if one thinks that people today are determined by many

very subtle mechanisms in work, leisure, relationships between two people, feelings, identity in a subtle way as never before, even if this determination also functions via supposed autonomy (one-sided Foucault 2006; more differentiated Fücks 2013, pp. 73 et seq.; Stengel 2011, p. 259; Muñoz-Rubio 2002).

There is a similar interaction between politicians and voters. A radical sustainability policy, for example, only has a chance if it receives a certain degree of support; this is likely to apply even in dictatorships to some extent. Conversely, as a citizen, I can only directly promote such an option if it is also offered to me by politicians, for example in elections. However, one can also become politically active oneself. And no one is legally obliged to eat meat or fly on holiday, even if the legal permission (and the sales efforts of the companies) have their share of these widespread wishes. This shows something else: Politics naturally also sets the framework for economic activity and is in turn elected or voted out of office by the people and at the same time influenced by lobbying actions of the economy which itself is also based on lifestyles, interests of workers, etc. This means that politics and lifestyles have an interconnection as well. There is another interplay between media and politics, in which a successive personalisation, staging and aestheticisation of politics increasingly displaces social discourses on real content-related problems (Bussemer 2011; Ekardt 2017b). And there are other interactions: Politics today is organised in an international multi-level system, so that different policy levels can drive or hinder each other – and influence or slow each other down with citizens, companies and lobby associations.

This shows that one has to reckon with a complex interplay of different actors – and that this goes beyond common assignments such as micro or macro. In negative terms, we can also speak here of a multiple vicious circle between political decision-makers and citizens and between customers and companies (as well as links between the two vicious circles and with other actors), which mutually reinforce each other in their non-sustainability. This interrelationship seems trivial. However, in economics, for example, it is simply defined away with the claim that people's preferences are purely self-referential. This allows beautiful models to be created and converted into mathematical calculations, but empirically they are of little use.

There are also interactions (or ping-pongs) in everyday questions. How my marriage works does not just depend on me. And not even on just my wife and me alone. Many other players, my profession, my wider family, my living conditions or social issues can have a great influence. For example, if there are clear gender roles, my marriage could be different than if such roles did not exist. On the other hand, I can influence all these spheres. This can be said without using ambiguous terms such as actor and network and all possible assumptions associated with them, as some sociologists do (e.g. Latour 2005).

Misunderstandings About Political and Economic Power

But can one really think about social change, anthropology and a theory of society without drawing a clear line between the individual and the collective level? The examples given above suggest it. Nevertheless, it is an old dispute in the disciplines

of behavioural science whether one must distinguish between the individual and the social level when explaining human conditions (Giddens 1984; Habermas 1981; Greve 2015; Mead 1934; Latour 2005; Ekardt 2016a). And yet the controversy that asks whether individualistic (so for example most economists) or collectivist terminologies (so for example some sociologists) should be used (or both) is misleading. For even a collective or structural level would express the concrete motives of people or cooperating groups of people or at least their side effects and aggregated consequences of action. Conversely, each individual is naturally a product of the structures into which he or she has been socialised. To put it bluntly: We encounter all relevant motivational factors within ourselves, but also in structural – but again human – consolidation. And: Capitalism certainly shapes our behaviour, but it was conceived by people and still feeds from many small actions of buyers, entrepreneurs, workers, political-framework setters, etc. (on capitalism in Chap. 2.6). For similar reasons, the present book avoids discussions about whether human behaviour has to be read “linguistically” or “as practice” or somehow else.

Thus, maintaining political power or accumulating entrepreneurial capital are ultimately collectivised versions of factors that can be called self-interest calculations and path dependencies, for example, and which also play a major role in individual life. That this is the case, and what the individual factors are, will only become fully clear in the course of further analyses in view of the large number of aspects considered (see Chaps. 2.2, 2.3, 2.4, 2.5, 2.6 and 2.7). If one were to try to enforce the separation between micro and macro in spite of all this, the question would inevitably arise where the line is between one to the other (such a line does not have to be exact for logical reasons, but at least has to be approximated: Chap. 3.2). In capitalism, for example, I am involved with my supposedly small actions every day, as we have just seen – but is that micro or macro level? Or if there are political disputes about a single person, let us say about the German Chancellor – it remains unclear what would be micro and what macro. Of course, we can speak of social change when everyone moves, or of individual change when only individuals move. That is what I am doing as well. However, the idea that two very different influencing factors, called “individual” and “collective” factors, become effective at these levels is not tenable.

It is clear that not every social state was deliberately brought about by someone. Certainly, no one intended for climate change. Of course, individual actions aggregate to something that can also be called structure, but without this being something completely new. And individuals do not necessarily always act rationally and consciously, as we will see in detail (Chaps. 2.3 and 2.4). So, I am not advocating a methodological individualism or a methodological collectivism, but rather assume that this is an inadequate confrontation (with the same intentions, despite some other terms, therefore similar to Greve 2015; Habermas 1981; Mead 1934; ultimately also Giddens 1984). In a nutshell, one could say that the individual is both cause and expression of social influences and constraints. We will see later: All factors relevant to human behaviour and thus to change confront us within ourselves; but to a certain extent they also face us as a structure, let us say: as a capitalist society. And there are other people behind it.

Rather misleading is also the separation of supposedly external and supposedly purely autonomous motives (extrinsic versus intrinsic), since literally everything that

people do seems to be influenced by someone or something. Discarding this separation also saves controversies like those in the educational sciences, whether children train their behavioural drives as a form of self-expression, by way of imitating their parents or within the framework of a desire to get to know rules. The hypothesis of this book is rather that one has to expect a multitude of motivational factors.

All this means that, if you want to understand social change and the transformation to sustainability, you have to reckon with the interplay of many actors – and you have to distance yourself from the micro-macro distinction. This will also have an influence on concrete measures and instruments (Chaps. 2.7 and 4.1): Because according to what has been said, it is clear that even solutions cannot start with “the” citizens or “the” companies or “the” politicians alone – the popular search for “the” main group causing non-sustainability proves to be (also after further considerations in the following) a chicken-and-egg problem. Complex, comprehensive solutions are therefore likely to be needed.

2.2 Knowledge, Values, Environmental Awareness as Key Factors? On Misperceptions About Self-Interest

This section now goes into the analysis of the individual motivational factors. The first question is about knowledge and values, often mentioned as the primary factors (this is then followed by analyses of self-interest). Relying too much on experiments and surveys (see Chap. 1.7) makes it likely that factors which are tangible are over-emphasised in the search for explanations of non-sustainable behaviour (it is also misleading when, despite the huge ecological footprint, even small changes are labelled as ecological behaviour and then explained; exemplary Liebe 2010). We will look into all of this in the following sections.

Does Knowledge Really Matter?

As already mentioned, we start with the relevant but perhaps somewhat overestimated factor of knowledge. If there are complaints about a lack of e.g. climate protection, the most common statement is that many people have not yet fully understood the extent of the climate catastrophe. Consequently, more education is needed (instead of many Russell-Smith et al. 2015; Fazey et al. 2018; partly also Schellnhuber 2015). But is this really the central message for all those who want to understand and change behaviour? Knowledge as the sole or at least primary key to a better world? The fact that knowledge is easy to grasp in surveys and experiments, as well as values or self-interest calculations, increases the expectable enthusiasm for these factors among researchers, especially among sustainability researchers (see e.g. Lang et al. 2014; Fazey et al. 2018). But are these factors really so important? Let us begin with knowledge.

There is no doubt that different people – also in different countries and different social groups – know different things about climate change. There are even some

things that no one knows at all, including some that no human being will probably ever know in the future either. Science faces complex uncertainties, especially when it comes to sustainability issues. Climate change and the huge diversity of ecosystems are examples of this, as are traditional environmental protection issues such as the cumulative and long-term effects of air pollutants (Ekardt 2016a). Accordingly, the exact (!) life-cycle assessment of each individual product purchased is too complex even for experts. Complex company interdependencies and supplier relationships make all this even more difficult. The fact that we do not know everything can also be found out through surveys (Kuckartz 2014; Welzer 2008; Ekardt 2001). But how relevant is revealing all details of sustainability impacts and the consequences of each action in order to explain and overcome the lack of sustainability action by individuals and entire societies?

We can start with an obvious initial observation: you can know everything about the dangers of smoking and still smoke. However, this striking phenomenon does not only exist in smoking. So far, we seem to have been quite successful in ignoring the fact that our resource- and greenhouse gas-intensive lifestyle is putting the lives and health of many people in other parts of the world and future generations at risk. Not to mention the threatening existential, military and economic disadvantages for ourselves. Yet there is no lack of discourses, theories, technical ideas, beautiful conferences, exciting television programmes and articulated goodwill, just as there is no lack of ministries and institutions that deal with sustainability.

The first aspect that often puts all this beautiful factual knowledge on the spot is that factual knowledge does not provide a normative yardstick as to whether we should act or not. The fact that there is climate change does not in itself mean that it must necessarily be prevented by us, especially if we then would have to put other concerns such as economic growth or freedom of consumption on the back burner. Appropriate values are needed for this. Or at least selfish preferences that tell someone what they want for themselves or for a group of people they like. Or feelings like pity.

In addition, the relevance of knowledge is subject to further limitations. It is an everyday observation that the degree of interest in a matter determines whether one appropriates something, remembers information and even actively obtains information. Furthermore, in view of government information campaigns on environmental protection, intensive sustainability education and comprehensive information and counselling services, ignorance cannot be so great, at least in the industrialised countries. The limited relevance of knowledge, for example, for purchasing decisions as well as for the actions of politicians can be intensively shown experimentally (Klöhn 2006). The common explanation for this (in economics, psychology, etc.) is that knowledge is always perceived only in parts, simplified and often distorted (Piaget 1972; Berger and Luckmann 1966; Axelrod 1973). However, this leads us to factors other than knowledge.

Just how little can be achieved through knowledge alone can be seen from the fact that it is the ecologically particularly well-informed who are statistically the larger resource consumers – with increasing prosperity and higher education, factors such as air travel, car travel, apartment size and heating consumption or ownership

of consumer electronics are increasing. The Green voters, for example, who are statistically relatively well off in terms of prosperity and education, fly the most on average, although they are also the most critical of flying; the proverbial retiree without a great deal of environmental knowledge often has a better record, especially because important markers such as cars, flights, meat consumption and heating are less relevant to them (Wuppertal Institute 2008; Ekardt 2016a). Various everyday observations by the author in the approximately 60 annual discussions following my sustainability lectures – and the evaluation of internet forums like in the ZEIT (Ekardt 2018) and on Facebook with regard to young sustainability activists (Chap. 1.7) – have also shown that there is a large number of highly educated people, often equipped with sound ecological values, who nevertheless have no intention of addressing some “big” chunks of their footprint such as meat consumption and flights. Moreover, the approximate sustainability effect of many behavioural traits is quite obvious. Many people, also politicians, are well aware of this. Furthermore, the scientific uncertainty in ecological questions usually refers only to the extent of a certain development, but not to the existence in principle, for example of climate change. At least approximately adequate measures could therefore be taken.

Of course, all this does not mean that knowledge is totally irrelevant. Nevertheless, there is much to suggest that a knowledge problem only becomes a problem because most protagonists perhaps meet sustainability with verbal agreement, but ultimately with inner reserve. Strictly speaking: Wanting influences knowledge. Or illustrated by an ironic example: Not only poor, often less educated globalisation losers voted for a US President Donald Trump or for a Brexit.

Do Values and Awareness Really Matter?

However, one could also modify the thesis that there is a lack of sustainability knowledge and say: Perhaps there is no lack of knowledge, but there is still a lack of consciousness of sustainability. In private, political and scientific circles, one permanently hears statements such as “I am conscious of the climate problem”. First of all, this further confirms the finding that sustainability knowledge is not really lacking. However, with “consciousness” another level is claimed, namely beyond the pure knowledge of facts a value judgement e.g. for climate protection and perhaps even a concrete intention to act in the direction of greater sustainability. The existence of strong pro-ecological values among people e.g. in Western countries can be seen in many surveys and experiments indeed, even if the risk of socially desirable answers is taken into account (Kuckartz 2010; Ekardt 2001; Engel and Kurschilgen 2015; Buchholz et al. 2014; Bamberg 2013; Messner 2015; Kloeckner 2010; more specifically on cooperation, which can also be selfish rather than altruistic, in Chap. 2.6).

Contrary to common economic terminology, values and not just facts can also be rational, i.e. justified (Chap. 1.6). Contrary to the empiricist tradition shaped by Thomas Hobbes and David Hume, altruism also cannot be reduced to hidden self-interest alone. Otherwise, many behaviours would be inexplicable in cases in which

I myself have no advantage to expect (classically Hume 2007, pp. 296 et seq.; further von Harbou 2014, pp. 179 et seq.). We will see in the next chapter that altruism is partly even based in evolutionary biology (Blackburn 1998, pp. 46 et seq.; Gommer 2014, pp. 151 et seq.; Wilson 2012). However, this does not mean that values are stronger or ahead of other motivational factors (in this direction Bamberg 2013, pp. 151 et seq.; Messner 2015, pp. 260 et seq.; critically Glucksman 2005). Moreover, experimental findings suggest that people have a limited “quota” for altruistic actions and also for self-control, which will eventually be exhausted (Mazar and Zhong 2010, pp. 494 et seq.; Heath and Heath 2013, pp. 18 f.). Furthermore, there are also values that are contrary to sustainability.

Furthermore, in everyday observation up to self-observation, the “consciousness” or value judgements expressed often show no consequences in terms of real behavioural change as the initiation of a change in sustainability, climate or energy. For decades, people in Germany in particular have been developing an ever-greater awareness of sustainability and environmental issues; at the same time, however, resource consumption continued to rise during this period or remained constant at a high level (Wuppertal Institut 2008; Ekardt 2016a; Kuckartz 2010; overviewed in Tapia-Fonllem et al. 2013). It is also often forgotten that people’s self-proclamations should not always be taken at face value (Chap. 1.7). Consequently, if you look at those who are supposedly conscious and make their own behaviour the subject of discussion, you regularly meet resistance or even aggression (Ekardt 2018).

Maybe resource consumption would have increased even more drastically during the last decades if awareness – respectively knowledge and values – had been lower, but this is rather difficult to measure. It is more likely to say that more people would smoke if there were no information – because in smoking, where one’s own potentially fatal illnesses are directly involved, self-interest is another factor in addition to knowledge, which cannot be used just as clearly in sustainability issues. Perhaps, in the abstract, one can hope that the great debate on sustainability that is beginning will also lead to a change in action in the long term. In any case, an allegedly high level of consciousness will not suffice.

The limited effect of values is also due to their character. Obviously, the value positions between different people, groups, countries, cultures or times can vary greatly in pluralistic times (Hermwille et al. 2015; this does not necessarily mean, however, that they are all normatively correct: see Chap. 3.1). In addition, sustainability values do not only compete with self-interest. As mentioned earlier, they also collide with other values, such as the normative convictions that have grown over decades and centuries, such as an unrestricted self-expression, an economically narrowed understanding of freedom and fixations on a path of unlimited growth and progress (aptly Heyen et al. 2013; one-sidedly Stengel 2011). Furthermore, it is interesting that, contrary to a widespread cliché, people with children tend to show just as little altruistic commitment to ecological goals in surveys as people without children (Liebe and Preisendörfer 2013, p. 253).

The fact that conflicting goals are ignored, that we repress facts and perceive knowledge distortedly could be an essential cause for the disintegration of articulated consciousness and real behaviour. It remains to be discussed that people seem to be

very contradictory – both in terms of their different positions and attitudes on the one hand and their behaviour on the other. In any case, it becomes clear that those who want social change, for example towards greater sustainability, will not be able to focus primarily on knowledge transfer and values. Rather, we will have to devote ourselves to the factors that undermine and hinder our knowledge.

Misperceptions About Self-Interest, Including Political and Economic Power

We have seen: Lack of knowledge or awareness is somewhat relevant. But it cannot be used as the sole explanation as to why change does or does not occur, both in private and on a social level. Rather, it became clear that we very often simply do not want change and would rather not want to know certain things exactly. One explanation for this is that tangible selfish interests often stand in the way, both individually and structurally aggregated in form of political and economic power. Some behavioural scientists, especially economists (and in a way also biologists), even make the factor of self-benefit calculations absolute to a large extent. We will see later that the observation of human self-interest ultimately leads back to the Bible (and Plato).

The relevance of self-interest in terms of sustainability is easily demonstrated by reflection and various external and self-observations, further underlined by experiments – not surprisingly, because politicians are also human beings and have the basic human qualities (Ekins et al. 2014; Fatheuer et al. 2015, pp. 137 et seq.; Stengel 2011, pp. 183 et seq.; MacKay et al. 2015; Selten 2011; Dawkins 1976). For example, if you can derive profits from holiday flights, someone is likely to offer them, and as long as people want to fly, it is not very attractive even for reelection-oriented politicians to make flying more expensive. Similarly, for a multinational textile company, it is self-serving, namely sales-promoting if it officially appears as socially and environmentally friendly, while in reality maximising profits – even if child labour and poor working conditions may contradict the values of managers (on the role of multinational corporations also Wuppertal Institute 2008; Ekardt et al. 2016; Radermacher and Beyers 2011). Moreover, by observing and recording purchasing behaviour, any company can easily detect that many customers are less sustainability-oriented than they proclaim. To what extent a company complies with standards can hardly be checked as a customer anyway, and even critical observers such as environmental associations can at best uncover single scandals. Whether entrepreneurial (or consumer) selfishness has become more important in recent decades, as is often assumed, can be discussed controversially (for example Scheidler 2015; see also Radermacher and Beyers 2011). Presenting the phenomenon as fundamentally new, however, is not very plausible.

Likewise, in politics, a self-interest in power, reelection and profiling can become relevant, as already results from simple reflection, observations and experiments (MacKay et al. 2015; Selten 2011). For example, if politics makes fossil fuels more expensive, this will stimulate all of us to consume less. Conversely, our rage at such

politicians stimulates their fear of being voted out of office – with the result that environmental policy is rather sluggish. Another factor contributes to this: For future generations and the socially vulnerable, it is difficult or even impossible to articulate their self-interest. Consequently, politicians have little motivation, within the framework of their own self-interest calculations, to do something good to those voices which are only weakly or not at all articulated. Likewise, the inhabitants of poorer countries, who may suffer indirectly from environmental political decisions in the industrialised countries, can only articulate themselves to a limited extent and cannot vote our Western politicians out of office. Conversely, companies threatening to move abroad creating job losses, and trade unions trying to prevent that are very present as self-interested pressure-makers for politicians. More generally speaking, the advantages of climate protection, for example, often appear to be uncertain, far removed and not clearly visible, while the costs are often tangible here and now, for example in the form of higher energy prices (even if the economic cost balance is exactly the opposite in the long term: Chap. 1.4). Politicians may think: “Should we really push forward an energy turnaround as a rich oil country? Should we pass global climate protection agreements which also cost money in the short term?”

So, it is about political and economic power. But in view of the described mutual influence it is – we saw it – also a matter of self-interest of all of us (one-sidedly therefore Fatheuer et al. 2015; Bedall 2014). Companies want to assert themselves in the market like politicians want to get reelected and may be “voted out of office” by customers if they only offer (more expensive) organic products. Conversely, a citizen or customer can only choose or buy an offer that is actually made to him. It should not be overlooked that sustainability is sometimes also a business case, looking for example at energy efficiency. If that is the case, sustainability will then be pursued by many. However, this is not enough for drastic objectives such as a rapid complete phase-out of fossil fuels and a frugality-driven overcoming of the growth society (Chap. 1.3).

The fact that all players are interconnected, and it is not just about politicians or entrepreneurs, explains at the same time why in the non-capitalist economies of the former Eastern bloc no greater sustainability seems to have taken effect despite the no self-interest policies. While one could think that with prosperity usually being lower the environment could have been saved, the striving for economic efficiency that is so typical of capitalist actors and sometimes saves resources for cost reasons alone was lacking (Acemoglu and Robinson 2012).

By the way, also dictators and not only democratic politicians tend to act selfishly – which is why democracy cannot be stylised as the main obstacle to social change (which is why the idea of an eco-dictatorship must also be viewed critically even from a perspective of radical sustainability: Chap. 3.5). Rather, striving for self-interest is a general human phenomenon, even if Marx-inspired critics of “corporate interests” and capitalism sometimes underemphasize this (for example Fatheuer et al. 2015; Moreno et al. 2015). In special constellations such as with the principle of consensus in international climate negotiations, the pursuit of self-interest becomes particularly problematic, but such findings quickly distract from the fact that most people involved are only moderately interested in really far-reaching

sustainability measures: Politicians, entrepreneurs and citizens of all nations. There are also clues from evolutionary biology for this omnipresence of self-interest; after all, humans are a product of evolution, which is based on selection. This point as well as the not predominantly altruistic disposition of humankind will be discussed in detail later (Chaps. 2.3 and 2.6).

It is also very doubtful whether everything can really be blamed on political and economic power – even beyond the question of interaction with the citizens and consumers. On closer inspection, despite all the relevance of self-interest, it is quite obvious that people neither consciously calculate all the time nor consistently act selfishly or even consciously balance all factors and then calmly decide. Again, a critical self-reflection is sufficient to determine this; however, it has also been shown experimentally many times (see Klöhn 2006 and Nowak and Highfield 2013). The image of the always and exclusively calculating and selfish person is pretty simple – but it is just too flat to be true, even if e.g. economics (despite differentiated research results even from behavioural economists) is still largely based on this simple image. Neither all decision-relevant factors are carefully identified by politicians, entrepreneurs or any of us, nor do we always have exclusively our own well-being in mind. Often, we just look for comfort, follow habits or repress aspects; or we actually act altruistically, albeit perhaps less often than some people think, as we will see in more detail in the following chapters.

Flaws of Systems Theory

One thing about all of this can be seen consistently: Human behavioural drivers are condensing into structures. One of them is an economic system like capitalism. Another is a political system such as free democracy with balance of powers. Institutions and organisations develop their own logic which in turn reflects human behavioural impulses, such as the pursuit of self-interest.

From the systems theory perspective of, for example, Niklas Luhmann (1993; also Siemer 2006), any social system such as economy, law or politics can only react to one binary code (“pay/not pay”, “right/wrong”, “government/opposition”). Individuals do not appear in this theory, only structures. The individual only exists in this alternative interpretation of the phenomenon of self-interest if he or she is an element of politics, economics, etc., through whose “constraints” he or she is thought to be virtually determined. This is essentially underpinned by a constructivist theory of cognition: all social systems are completely self-referential; for facts (and norms) are always only subjective, or “construction”, and everyone can only see the world from his or her point of view. If human learning is thus largely excluded, this seems, of course, clearly exaggerated.

Apart from that, it makes no sense to deny the possibility of facts in general (and thus also, for example, of insights into social change). For anyone who declares facts to be per se non-existent cannot ascribe any truth to this statement itself; systems theory would then per se also know nothing about how societies and

individuals change, would thus completely escape the ground itself (see already Chap. 1.6). Of course, it remains true that people are prone to subjective views (sociological constructivism). But that there is no way to overcome subjectivity, regardless of how many steps of control we use, and that nothing is objectively recognisable in the world per se: this sort of philosophical constructivism is simply not tenable.

For the moment we have seen that human self-interest (including the pursuit of profit and political power) is important but are just as knowledge and values in danger of being overestimated.

2.3 Evolutionary Biology, Neurophysiology and Personal Biography Behind Factors of Motivation?

In the pursuit of self-interest, people around the world seem to be on an equal footing. Also, as we will see in the following chapters, we are often not as rational (in terms of self-interest and values – both can be rational: Chap. 1.6) whilst other factors prevail. We will take this as a starting point for discussion the (partially) biological background of behavioural drives in the following.

Do Genes Matter? Sociobiological Analysis of Human Behaviour

Cases of overexploiting the basics of livelihood can also be found all over the world and in environmental history (Diamond 2005; Schellnhuber 2015, pp. 244 et seq.; Muñoz-Rubio 2002). These points suggest a reference to human and ultimately biologically based basic qualities. In its origin, a human is a being that has emerged from a biological history of evolution and, as a living being, is shaped in certain respects by the genetic material formed in evolution. And as already indicated, what we know for certain about our evolutionary history indicates the fact that humans have relatively selfish basic tendencies within themselves. We will take a closer look at that now. However, it must also be examined how strong biological (besides cultural) factors really are – and whether our partly biological nature also promotes other sides than the pursuit of self-interest within us.

We are entering thorny ground now. Biological behavioural research may still be tolerated by economists and psychologists (although the exchange between those disciplines is often weak). However, sociologists, ethnologists, educational scientists and cultural scientists – and especially gender researchers – are often categorically opposed to this (just as economists and biologists often do not want to know much about these disciplines). Biological behavioural research is often mistakenly assumed to think that the human being is influenced alone (!) biologically – or that not only explanations of behaviour are intended, but also normative statements. This is of course not the case according to the developed epistemological differentiations (Chap. 1.6).

In recent decades, sociobiology in particular has been devoted to the evolutionary side of human behaviour (Dawkins 1976; Wilson 2012; Nowak and Highfield 2013, pp. 9 et seq. and 39 et seq.; Tomasello 2017, pp. 9 et seq.; Thornhill and Palmer 2000; critical Muñoz-Rubio 2002). Sociobiologists continue traditional evolutionary and genetic research and explicitly apply it to explaining social conditions. Sociobiology explains human self-interest, but also less rational human tendencies in view of their assumed biological background. The big question is to what extent tendencies such as the pursuit of self-interest are inherent in a person as a human being or whether they are the product of a certain culture (such as a capitalist culture). The distinction biology versus culture refers to a level behind the behavioural drives. This means that one can ask, regarding self-interest as well as other possible behavioural impulses, whether they have developed in terms of phylogeny or rather culturally.

Biological approaches to behaviour and change do not deny the relevance of culture, but nevertheless try to explain human behaviour to a quite large extent by way of genetic predisposition. The fact that humankind comes from an evolutionary process and thus has competitive and selfish qualities is a crucial, albeit not surprising statement. The fact that human beings come from the animal kingdom cannot be denied. That means that the competition for the most viable qualities has influenced us, for example the way we choose a partner, but not only. Therefore, it is much to be said for a biological rooting of at least partly selfish tendencies in humans.

Sociobiological researchers have shown based on diverse observations of human and animal behaviour as well as fundamental conditions of the functioning of evolution (for which we have various research findings, archaeological finds and genetic impressions) that evolution always has a cooperative side alongside the competition between individuals. This means reciprocity, respect, favouring relatives, even sacrificing oneself for a certain group (Wilson 2012; Dawkins 1976; Nowak and Highfield 2013). This shows, humankind is not purely egoistic, but partly also follows altruistic values or feelings (Blackburn 1998, pp. 46 et seq.; Gommer 2014, pp. 151 et seq.; Wilson 2012). But the history of this partial human altruism is a group egoism. Groups in which the members at least partially cooperated selflessly have simply been more successful in tribal history. However, this already indicates where the limits of human selflessness could lie – for example in the transformation to sustainability. Sustainability is about cooperation over great distances in space and time which is completely different from the Stone Age.

The evolutionary background plausibly explains the phenomenon, visible in everyday observations of others and of ourselves, that humans may act selfishly, but sometimes sacrifice themselves for family, tribe or nation – and that they thus show values and (partly) altruistic feelings. Besides the necessity of social coordination, the (over-)complexity of the world also makes it plausible that people in evolution have developed a capacity for orientation systems such as emotions, because a conscious (selfish or altruistic) calculation of all pros, cons, facts and arguments of human decisions would hardly be possible. Emotional factors such as seeking recognition, short-term thinking or convenience can be interpreted as factors linked

to what is essential for survival – which has always been precarious under Stone Age conditions – and strengthen cohesion among each other.

All of this is upsetting to many, especially when conclusions are drawn about the mating behaviour of humans (e.g. Muñoz-Rubio 2002). But nobody can seriously deny that man is a primate that (like all animals) has developed a DNA and thus a brain structure over hundreds of thousands of years (on this and on the following Dawkins 1976; Wilson 2012; Nowak and Highfield 2013, pp. 9 et seq. and 39 et seq.; Tomasello 2017, pp. 9 et seq.; Thornhill and Palmer 2000; Harari 2013). As we can observe with each (also clever) animal, also diverse behaviours belong to this inheritance. Certainly, in the last 70,000 years humans have acquired the biological (i.e. hereditary!) ability to culturally fill elementary drives and also to transform them – because this obviously offers an advantage in biological selection (otherwise this characteristic could not have developed). Thus, no “complete” set of behaviour has been inherited for a long time; a great deal is learned or transformed. Otherwise, despite all their similarities, the lifestyles of people around the world could not be so different (the role of culture for sustainability is examined in more detail in Chap. 2.5). But it would be a very strong assumption to think that this transformation is so strong that only the physical appearance of our nature is left – especially since our genes have apparently remained largely unchanged for decades. This would make it inexplicable why certain human phenomena can be found all over the world. Convenience, habit, repression, simple truths, scapegoats, etc. are not a privilege of a particular culture. The strong self-interested – and only in small groups (self-interested) cooperative – inclination of man is examined even more closely when we later examine the thesis of whether capitalism is not to blame for everything (Chap. 2.6).

Flaws of Sociobiological Approaches

However, sociobiologists sometimes exaggerate the performance of their behaviour and transformation analysis (on the following Muñoz-Rubio 2002; Ekardt 2016a). For example, despite the high plausibility of the findings described, it is still largely unclear how exactly a gene turns into concrete behaviour. In this respect, the equation of scientificity and precision with the natural sciences expressed in sociobiology proves to be somewhat simplistic (Nagel 2012; Irrgang 2001; Muñoz-Rubio 2002). In addition, the variability of human life on earth shows that humans form a culture. And these different cultures can then guide action for the individual in very different directions. Ultimately, cultural and biological elements intertwine in the genesis of human behaviour without always being clearly distinguishable. Furthermore, it is by no means true that biological influences are inevitably formative per se, whereas cultural factors can be changed (Irrgang 2001; Ekardt 2001). In order to be able to prove this, too little is known about the exact activity of genes and about the content of human genetic material.

At this point a side note on ethics and law: Like their critics, sociobiologists usually do not understand the distinction between is and ought and between genesis and

validity (Chap. 1.6). They do not realise that explanations of the empirical genesis of values do not say anything about whether they are valid normatively. Even if human behaviour, including tendencies such as collective violence, may have evolutionary foundations, that does not say anything about whether it is to be welcomed or condemned. In other words: being able to explain National Socialism does not mean that it can be justified. Therefore, the claim to explain behaviour purely with genes and evolution and at the same time as a substitute for ethics and law is wrong (overlooked by Wilson 2012). Even if it may be true that altruism evolved as biological group egoism, it does not prove, for example, that ethical and legal obligations for more sustainability (see Chap. 3) are normatively wrong. However, it partly explains why altruistic demands which are not aimed at groups, but ultimately at the whole world, like climate change, are rather difficult.

Will Neurophysiology Change Everything?

For some time now, sociobiologists have been receiving support from neurosciences, which are trying to shed further light on the biological basis of human behaviour and thus also the phenomenon of change with great media attention. Using imaging analysis methods, this research area aims at gaining insights into the human brain structure and at drawing comprehensive conclusions about human behavioural drives. Some brain researchers themselves have already lowered this very far-reaching goal to a much more modest level by comprehensive criticism of brain research (for the following Hasler 2012; von Harbou 2014). The brain is ultimately characterised by interaction of different areas which is too complex; most brain areas are activated for completely different drives for action; and the imaging is relatively inaccurate, because it measures brain activity via blood flows. Where exactly which drives are generated in the brain is simply not yet clear.

In addition, the type of representation of the mind in (brain) matter remains fundamentally unclear. Thomas Nagel has described this millennia-old body-and-soul problem as follows: Even if you knew everything about the brain of a bat, you would probably still not know what it feels like to be a bat from the inner perspective (Nagel 2012; Irrgang 2001). Brain research, however, has a certain tendency to ignore the fact that, therefore, the human mind cannot be reduced to a physical image of the brain, but rather brain-matter and mind seem to influence each other.

That is why brain researchers also fail with their drastic thesis that a human being, living in the physical world of causalities, necessarily cannot have a free will. Rather, the interaction described in the last paragraph indicates that freedom of will is likely to be a paradoxical and thus ultimately pointless problem: If there were no freedom of will, this issue, or anything in life, could not be argued about meaningfully, or at all. No brain research can solve this logical problem – even all the experiments that show that something can be observed in the brain when I think about it. This is a certain fact. But nobody says that the effect only runs in one direction, so to speak

from brain matter to thought. And human motivation and social change are far more complicated than simple laboratory situations where someone is supposed to decide whether to catch a ball or not.

The history of human evolution and probably cultural factors shape motivation and thus factors for change such as self-interest or emotions. So much has already become clear so far. Everyone acquires the cultural factors and activates the biological factors in the context of his personal and ever-changing career, which can also be described sociologically as socialisation. However, many would like to know that this is not only a general process, but that the very personal touch of the biography also shapes the degree of self-interest, the types of feelings and so on. Hitler's unhappy childhood with his harsh father and disoriented mother, which he involuntarily documented in "Mein Kampf", could have contributed to his criminal political life story. Or even more generally and trivially put: We all reacted strongly to our parents in early childhood, and much of what we did and partly still do today may have a basis there.

At the same time, similar living conditions seem to have totally different effects on different people. Simplistic explanations such as the fact that some people suppress every incriminating event can hardly explain this conclusively. Besides, nobody can conduct human experiments which include letting a person walk through different biographies. At best, monozygotic twins can be observed – and then it quickly becomes clear that, in addition to life circumstances, there are also congenital characteristics. In addition, the proverbial childhood, i.e. one's own environment, also reflects people who are themselves subject to behavioural factors, i.e. self-interest, emotions and so on, as well as the biological and cultural aspects behind them. In this respect, the individual biography can perhaps be called a special cultural factor. A look at it is primarily worthwhile if the very individual life situation of a person and not so much a social problem like non-sustainability is to be explained, at least if it is not so massively superimposed by delusions of one individual like the Nazi era.

To sum up: Human genes matter – but they are not the only driver of human behaviour; and admitting the relevance of genes has no normative, but only a descriptive relevance (both friends and critics of sociobiology neglect these differentiated perspective). The thus important but also limited influence of tribal history on humanity (supplemented by biographical circumstances) leads to the question to what extent human motives vary culturally, i.e. whether conceptions of normality, values, feelings or self-interest are in part culturally shaped. The broad factor of culture here encompasses everything up to the economic system. This is still to be investigated in detail (Chap. 2.5). And above all, the next step is to reconstruct what these other factors beyond self-interest exactly are all about (Chap. 2.4).

2.4 A Broader Picture of Individual and Structural Factors: Knowledge, Self-Interest, Values, Paths Versus Conceptions of Normality and Emotions

Up to now, important but often overestimated factors for change and change in individuals and in society have been scrutinised. Knowledge counts, self-interest counts – it has briefly already been mentioned that values count. In addition, as we have already learned from observations and experiments, less rational, less calculating and less conscious aspects such as emotions play a role. And behind all behavioural drives the human tribal history becomes visible, but apparently also human culture. In the following, we will turn our attention to some factors that are often forgotten. Only when they are adequately recorded, the conditions and obstacles of a transformation to sustainability can be understood. So, in addition to knowledge, values and self-interest, what shapes human behaviour and thus also social (and individual) change?

Path Dependencies and Problems of Collective Goods

Closely linked to the factor of self-interest, there are various external conditions, such as geographical and problem-related conditions, particularly in the context of sustainability. They also play a role in explaining human behaviour and social transformation processes, as does the structure of a problem. For example, the choice of a truly “different” lifestyle is made more difficult by technological and economic path dependencies: The grown Western way of living and working makes it much easier for me as an individual citizen or individual company, at least in the short term, to remain in the current civilisation and economic model than to break out of it. The conventional houses, cars and appliances are currently available. Even with very good will it is difficult to change this completely from 1 day to the next. Traditional structures, such as the inertia of administrative institutions (Droste-Frank et al. 2015; Newig et al. 2015; Abson et al. 2017; Juerges and Newig 2015; Klein 2014; Klinsky et al. 2012), act as obstacles to the rapid change required in itself (on the other hand, it is pretty obvious that the existence of institutions alone does not explain anything – e.g. Germany has perfect public institutions, but by the same token has one of the biggest ecological footprints in the world; overviewed by Abson et al. 2017). Similarly, regulation paths once adopted – such as the long-term licensing of coal-fired power plants – lead to a path dependency, as can be empirically observed from the massive resistance against a coal phase-out. More generally, modern natural science, technology and economics have been determining factors for the “paths” taken today since the industrial revolution and thus for modern culture. Previous investment decisions can also act as “paths”.

Like path dependencies, the closely related problems of collective (or public) good also represent a framework structure. Every citizen, every company and every politician knows that, for example, individual or state climate measures could sometimes mean a sacrifice – but that, as a single stakeholder, there is still little

impact in terms of preventing climate change. I cannot save the global climate – which is a “collective good” and can be used as such by all equally free of charge – on my own, nor can I secure my bit of stable climate. This certainty and its consequence that in the end almost everyone will use the seemingly free climate to the best of their ability until a collapse ultimately harms everyone (Hardin 1968; differentiated Nowak and Highfield 2013) can unfortunately have a discouraging effect on changing, whether in aviation and its regulation or in other areas. We seem to be only a tiny part of a big problem – which, however, arises exactly from our small, innocent, everyday actions. And if we want to solve the problem through firm agreements with others, then we do not know whether they stick to the agreements due to expected self-interest calculations, even if it would actually be better for all if all adhered to it. All this is further reinforced when looking more closely at the fact that sustainability policy has not exactly achieved encouraging results so far if you take the ecological footprint as a basis (Chap. 1.2; in detail on policy instruments in Chap. 4).

This, in turn, is not only an interpretation of external observation and self-observation and sociobiologically plausible but can also be depicted experimentally: A tendency to cooperate can be seen in game theory experiments primarily when a cooperation of other participants is to be expected, when the situation is manageable and norm violations are noticed and sanctioned (Engel and Kurschilgen 2015; Ostrom 1990; Tomasello 2017; MacKay et al. 2015; Buchholz et al. 2014). It is precisely these conditions that are not present in global problems such as climate change. In the same way, knowledge, ecological values, self-interest, but also path dependencies and problems with public goods become visible in the author’s participant observations over the last 20 years and, for example, in the evaluated anonymous internet comments (Ekardt 2018). Consequently, there is the impression that one cannot help feeling that one’s own contribution to a global problem is irrelevant anyway.

Concepts of Normality – The Strongly Underestimated Factor

Now let us come to the less rational, less calculating drivers of human behaviour. In addition to the above-mentioned, the human tendency to conformity or to concepts of normality, i.e. to orientate oneself towards other people and towards what is “normal”, appears to be very dominant. Instead of concepts of normality, one can also speak of mental infrastructures, baselines, group thinking or preconscious orders (see Stengel 2011, pp. 183 et seq.; Fisahn 1999, pp. 279 et seq.; Welzer 2008; see also Janis 1972, pp. 10 et seq. describing the phenomenon of group thinking, and Kloeckner 2010). Conceptions of normality go beyond mere habits (to these and other feelings see below). For they are associated with the idea that something is “usual” or “normal”. Conceptions of normality can be distinguished from values by their semi- or unconscious (Gröpel and Kehr 2014) and everyday cultural character, although there may be overlaps, for example in questions of whether homosexuality is regarded as “normal” (and “morally acceptable”) or not.

Conceptions of normality are typically common to many people, but can vary wildly or be reduced to groups, especially in the pluralistic modern world (Beck 1986). Neither habits nor conceptions of normality have to be consciously accepted at some point. Rather, it is likely to be an insidious process, with socialisation in childhood and in the respective culture playing an important role (classically Mead 1934; Piaget 1972; Habermas 1981). The self-logic of organisations can also have a strong formative effect, whereby organizations sometimes teach their members that even cruel crimes such as genocide are “normal” (Kühl 2014; Welzer 2008; Snyder 2010; Neitzel and Welzer 2011). Conversely, through our everyday actions, we all participate in continuing or modifying concepts of normality, unconsciously or consciously noticed by us. Even the most trivial everyday phenomena, such as talking to a stranger on the subway, shaking hands to greet someone, and so on, follow conceptions of normality. This becomes visible, for example, when people from different cultural backgrounds meet.

Conceptions of normality are naturally even more difficult to identify than self-interest calculations in surveys, because they are often not conscious. Experiments are even less suitable, because an experiment is not only almost inevitably hypothetical and under-complex (Chap. 1.7). It is also simply unsuitable to depict unconscious factors that, however, play a major role in the daily lives of citizens, politicians or managers. However, the existence of conceptions of normality results from findings obtained through self-observation, external observation and historical comparisons (like on totalitarianism) – which would be difficult to explain if, for example, only consciously calculating individuals were assumed.

In the context of sustainability, one sees for example: Irrespective of all intellectual insights, we continue to live with a huge ecological footprint. At least in the industrialised countries and the emerging market upper classes, and almost the whole rest of the world is following suit. If you put this book away, the next meat buffet, the next car ride to work or the next holiday flight is probably not far. Meat, commutes and flights are common nowadays, as long as you can afford it. If you say goodbye to air travel altogether, you may come under social pressure as an eccentric. For example, 300 hate comments were made under an article by me in the German national weekly ZEIT (see Ekardt 2018). In addition, continuing the current lifestyle is in line with the lifestyle of one’s own social environment, in which corresponding housing, cars and long-distance travel are marked as desirable (see also Enquête Commission 2013, pp. 438 et seq.; Stengel 2011, pp. 183 et seq.; however, one should not follow the emerging idea that there is a fixed number of lifestyle types).

Furthermore, it is precisely this luxurious lifestyle that entrepreneurs and politicians are generally accustomed to, which they should decide on abolishing. With predictable results: A large ecological footprint is normal, sustainability is not, despite all intellectual talk about it – not even for the talkers themselves. For the sake of testing, it is interesting to start a sustainability discussion with any other person, after which one will be surprised how little practical consequences this has for the person afterwards, even if there are hardly any self-interest related disadvantages and clear values favouring sustainability are recognisable. This is

particularly evident when, as with climate change, many things seem insecure (Janis 1972). Because then, the calculating thinking encounters limits particularly clearly.

We therefore assume that many things are “normal” without this being fully understandable solely through selfish calculations, consciously founded values or even quite general emotions such as a tendency towards habits or convenience. Also, because the presupposed “normality” is obviously changing, a separate category is necessary for this – besides the emotions, which rather represent a human invariable regarding factors such as convenience (see next chapter). The historical comparison already mentioned is also important: Only through concepts of normality can the behaviour of people under totalitarian systems of government be fully explained, in which nice, friendly people can gradually mutate into slaughterers without any significant sense of injustice (Kühl 2014; Snyder 2010; Welzer 2008). This is clearly visible, for example, in an extensive evaluation of secret (and therefore uninfluenced) recorded conversations of Wehrmacht soldiers in captivity during the Second World War (serious crimes of those involved are discussed there as quite commonplace, in sharp contrast to the self-portrayal as “good” soldiers; see Neitzel and Welzer 2011). The interplay of concepts of normality with emotional dispositions such as a tendency to search for scapegoats will still be discussed.

Empirically, however, the idea that conceptions of normality could develop in any direction is not plausible. If that were true, the participation of completely normal people in the Nazi dictatorship would be just as likely as their participation in a transformation towards sustainability. This ignores the fact that totalitarian states and their propaganda can link sometimes more easily to human emotions and self-interest calculations than would be possible with climate protection, for example. However, it would be one-sided to understand concepts of normality as the one and only explanatory factors of behaviour and change (exaggerated e.g. Welzer 2008; against the overemphasis of conformity or norm determination, e.g. Habermas 1981, vol. 2, pp. 300 et seq., ultimately contra Durkheim and Parsons; see also Fisahn 1999, pp. 73 et seq. and 90 et seq.).

It is therefore to be expected that not only the actors but also the factors will influence each other, as will become clear time and again in the following. Calculations of self-interest, for example, are only directed in a certain direction by concepts of normality (and values, and emotions). And across all other factors lies the cultural and evolutionary character of these factors, because concepts of normality vary in their content just as much as they represent a human invariable in their basic existence. So, being a soldier in Japan 70 years ago, it was absolutely desirable to die in a war, because the return home would have branded the survivor and his family socially outlawed cowards. This could even make a suicide appear “self-interested” in a rather strange cultural form.

So far, at least questions of knowledge, self-interest calculations and concepts of normality have to be considered simultaneously if we want to understand (or influence) social change. However, perhaps the most important factor for sustainability and for change in general has only been mentioned briefly so far and

is now to be elaborated on: emotions. It can be observed in many ways and documents, for example, that not the most effective means of pursuing an objective is chosen, for example due to knowledge reshaped by subjective feelings (Akerlof and Shiller 2009, pp. XI, 21 and *passim*; Selten 2011, pp. 24 et seq.; Klöhn 2006, pp. 95 et seq.; Dean 2013, pp. 170 f.). This cannot be solely due to the fact that we naturally pursue different, competing objectives (for instance, the effective pursuit of such objectives as climate protection may not always be conducive to the effective pursuit of the objective of maximising profits). The fact that competing objectives by no means explain our non-calculating side alone is clear from the fact that objectives by no means always correspond to consciously (!) founded values or selfish preferences (Akerlof and Shiller 2009, pp. XI, 21 and *passim*; Selten 2011, pp. 24 et seq.; Enquête Commission 2013, pp. 438 f.; Klöhn 2006, pp. 95 et seq.; Dean 2013, pp. 170 f.), as suggested by certain economic and political stereotypes (MacKay et al. 2015; rarely also 2011).

The Role of Human Emotions

From the non-calculating and semi-conscious cosmos, the factor feelings is relevant alongside concepts of normality. Emotions are also the most obvious expression of humanity's evolutionary heritage (Ekardt 2017b). From everyday self-observation and external observation tendencies towards habit, comfort, repression, the urge to assert oneself and self-preservation are common – as well as the desire for recognition and trust, for a reduction in complexity and rules of thumb. We like to believe in “stories” and simple truths and at the same time often find it difficult to deal with great complexity (Dean 2013; Klöhn 2006). We tend to generalise purely anecdotal impressions and possibly also follow a religious feeling. We search for our own “rank” and allow our knowledge, our values and even our self-interest to be shaped by a limited subjective perception. Let us take a closer look:

The existence of habits, convenience and short-sightedness is already indicated in interviews and experiments (in which players, for example, do not choose the most easily calculated and profitable method of playing), as well as in everyday observations up to historical events and self-observation (see Milinski and Marotzke 2015; Liedtke 2011, pp. 37 et seq.; Kahneman 2011; Akerlof and Shiller 2009, pp. XI, 21 and *passim*; Steinberg 2013; Dean 2013). Many behaviours would be inexplicable if people were consciously calculating and selfish throughout. And not every behavioural suggestion expresses an idea of normality. Sociobiological and neurophysiological assumptions about strong emotional impulses are also plausible because the world is ultimately too complex to be understood and calculated completely rationally; in addition, human reproduction works largely via emotional impulses (Liedtke 2011; Steinberg 2013). That's already come up. This multiple plausibility check of the relevance of emotions is important because otherwise, such a largely unconscious phenomenon would be difficult to grasp.

The structure of global sustainability problems such as climate change offers manifold further points for the effectiveness of emotions, again in a rather hindering

sense (Kuckartz 2010; Ekardt 2001). With climate change in particular, the aforementioned uncertainty about the exact advantages and disadvantages of doing or not doing something is already standing in the way of deliberately calculated action, which, in addition to concepts of normality, also makes emotional orientations a strong compass (Janis 1972). Furthermore, it is difficult to establish an emotional relationship to the highly complex consequences of an action which are not only insecure, but also spatially and temporally distant, imperceptible and therefore difficult to imagine, and, moreover, linked to other problems. The not gradually increasing character of sustainability problems such as climate damage makes it even more difficult. Consequently, the internet comments evaluated (at Ekardt 2018) are characterized by emotional indifference to environmental problems. On the other hand, the concrete advantages in the here and now of the daily car ride to work can be felt very well. Or the observation that my girlfriend is sad because I am not going to Egypt with her by plane. All of this is also underlined by the already mentioned observation I have done recently with Facebook profiles of 246 Facebook friends of mine that can be characterized as young sustainability activists born 1988 or later (based on their posts, memberships etc.) – 203 of them presented pictures of (several) long-distances journeys on their account (Chap. 1.7).

The fact that spatio-temporal distance massively reduces empathy is not only a recurring finding of self- and external observation. For example, very few people are massively (!) consternated when they hear about wars or accidents with thousands or more dead on television. Rather, this is also evident in experimental psychology, for example in the famous Milgram experiment, where test persons are urged to punish anonymous people with electric shocks by an alleged authority figure for the purpose of gaining knowledge about learning processes under threat of punishment and finally (allegedly) kill test persons (Milgram 1974; Welzer 2008). Obviously, people have a considerable emotional talent for convenience, for staying within the familiar, for suppressing unpleasant connections, for considering themselves “not responsible” (for dead test persons, or for climate change), and for finding others even more despicable and thus justifying themselves. That “the Chinese with their coal-fired power plants” or “the off-road vehicle drivers” may have a smaller ecological footprint than oneself as a holiday air traveler is obviously not occurring to most of them.

Also, evolutionary biology may explain historically, why people have the inclination to “increasing” their own existence (increasing votes, enterprise profits, or personal possessions) is a very human feeling and may have led to wanting even still more, when practically no more concrete self-interest is reached. Also striking is the human tendency to strive for recognition from other people, for example through material (resource-intensive) “status symbols” that assign an identity and a place in the social network. This is done, for example, by striving for things that show me and my fellow human beings that I am a well-off, nice, cosmopolitan person who is also sometimes exploring the world on a climate-damaging long-distance trip. All this could probably be intensified by the fact that people in the secular age sometimes have feelings of senselessness and try to compensate them materially (Santarius 2015; Paech 2012; Ekardt 2001). This could be supported by the almost

sacred character with which many people today, for example, use long-distance travel as a supposed source of meaning. Conversely, sustainability can hardly mobilise concrete emotions on a comparable level.

Other emotional factors such as a human defense reflex against criticism also come into play: Who likes to get their own nose or their own holiday flights be the subject of debate? Who would protest against themselves? Furthermore, other experimentally confirmed human tendencies are listed here only briefly (Klöhn 2006, pp. 95 et seq.) which also have a rather fatal effect in the context of sustainability and climate. These are for example the lack of ability to believe in future catastrophes, notorious underestimation of moderate probabilities as well as the own, supposedly “only small” contribution to big, highly complex events (I am a holiday-air tourist versus the much worse Chinese and off-road vehicle driver – or “the corporations” of which I am a customer). And moreover: a tendency to try to solve problems with known means (which may have just caused the problem); tendency to assess major problems on the basis of highly selective personal experiences and anecdotes (see also Scholz 2011).

A particular problem is the emotional strategy with which people hide contradictions in their attitudes or between their own attitudes and behaviours. For example, people are morally in favour of sustainability, but still afford regular holiday flights and a high consumption of animal products. Or we want more economic growth during the euro crisis and at the same time call for much more climate protection, which as seen ultimately undermines the growth society (Chap. 1.3). We cover up these strange contradictions by inventing excuses, simply “forgetting” negative actions and artificially inflating or even inventing positive actions; such strategies for avoiding “cognitive dissonances” are also documented in experiments (Stoll-Kleemann et al. 2001, pp. 107 et seq.; Ekardt 2001, § 13. 3.). Directly connected with this is the human tendency to “overlook” gradual changes, which, for example, leads to the non-awareness of changing normalities such as one’s own increasing prosperity, which – with growing or at an ecological footprint stagnating on a high level – is regarded as quasi natural. Furthermore, surveys, experiments and participant observations (and the internet evaluation mentioned: Ekardt 2018) show that people whose own lives are questioned in terms of sustainability usually declare their lifestyle to be unchangeable and react with resistance or even aggression.

In the tradition of psychoanalysis since Sigmund Freud’s days, one could also ask, as a specific expression of the factor feelings, whether emotional injuries in the individual’s life story can “compensatorily” lead to excessive environmental consumption. Then the individual biography (contrary to Chap. 2.3) would obviously be a key factor. The idea seems to be that a psychologically healthy person, free of childhood injuries, behaves automatically in a sustainable, not “consumerist” way (classically Fromm 1996; see also Hosang et al. 2005). However, an examination of sociobiological findings has shown that such empathy is more likely to be expected in the social vicinity – and not over the large spatial-temporal distances typical of sustainability. This coincides with various observations of everyday life, which by no means indicate that people with stronger religious tendencies, for example, have a smaller ecological footprint. In addition, balancing diverse conflicting interests

over long spatial and temporal distances is very complicated; empathy alone would be of little help here.

Totalitarianism and Behavioural Research

The interplay between self-interest calculations, concepts of normality and emotions, as well as the foundation in evolutionary biology of the factors mentioned above, makes totalitarian developments such as in the Nazi era more plausible (Milgram 1974, p. 183; Welzer 2013) than if one only refers to obvious factors such as a lost First World War, the world economic crisis and the anti-Semitic tradition. Such historical and cultural factors are relevant; in concrete terms, for example, they shape self-interest calculations. However, one has to keep the emotional aspects in mind: people seek recognition, seek scapegoats to preserve their own self-importance, are able to repress bad developments and gradually shift their concepts of normality into other (even completely inhumane) directions. The basic tendencies of the human species, which can be traced back to the Stone Age and are therefore biologically grounded and sometimes violent, also play a role. All in all, emotions and concepts of normality show clearly that ordinary people (and not only psychopaths) can become perpetrators of indescribable collective crimes. Emotional repression and concepts of normality were also stabilised by organisations like the Nazi SS that used various means to gradually reduce the inhibition of their members to kill, for example. At the same time, cultural factors must be taken into account when (left- or right-wing) totalitarianism is explained. Among those factors are also some that are usually less seen, such as the social-historical resistance to liberal democracy by those who felt threatened by it in the twentieth century.

The result of all this is that the little-conscious and little-calculating factors of emotions and concepts of normality play a central role in motivation and social change, as can be documented methodically in many ways. And this statement can be obtained in this balance precisely by looking as broadly as possible (in a well transdisciplinary tradition without too much respect for the doctrines of the disciplines) at the various disciplines of behavioural science.

2.5 Culture as Factor of Motivation, Besides Biology: Environmental History, Protestantism, Capitalism

We have seen repeatedly: Each of the factors relevant for behaviour and change seems to contain not only biologically induced imprints but also cultural influences that are anchored in the process of socialisation in the individual. These drivers influence what is considered normal and what is selfishly attractive, and in some ways they can even direct emotions into a certain direction. And value attitudes are easily recognisable anyway as an expression of cultural elements (whereby the tendency to follow values as such certainly stems from evolutionary history: Harari

2013; Wilson 2012). In this chapter, we will analyse the role of cultural elements in more detail.

Culture Besides Biology in Environmental History

Culture means the totality of practices, customs and practices that are not biologically inherent but socially acquired. The respective economic system and technical development levels can be understood as subaspects of culture.

Today's environmental crisis and the prosperity behind it are, as has already become clear, not omnipresent in terms of human history, but rather without precedence. In this respect, a lack of sustainability in particular cannot be thought to be caused by evolutionary biological factors alone. It is also difficult to explain alone geographically that modern technology and the economy emanated from the Occident as a source of prosperity and overexploitation of the environment. This is true even if the geographical conditions were favourable, for example for productive agriculture and a close exchange in a fertile, densely populated Europe in the run-up to the industrial revolution with its major entry into fossil-fuel use (more detailed Schellnhuber 2015, pp. 212 et seq.; Diamond 2005). In the early modern period, the so-called Little Ice Age, a period of relatively cool climate, and the growing population triggered a clear need for action in terms of economic productivity.

Apart from that, we can also reconstruct interesting features of early human history with the help of excavation finds, among other things, regardless of how fragmented they may remain, and they appear to be of particular environmental historical interest (detailed on the following Harari 2013; Diamond 1999). Apparently, about 70,000 years ago, for example, a cognitive revolution took place that brought about the ability to use complex language and complex cooperation, even through shared worldviews. To what extent language was primarily driven by the concrete coping with everyday life, by the creation of group identity by means of gossip or by the development of common world views and the like can no longer be elucidated. In any case, in the aftermath of this, man gained clear supremacy of nature. For the rest of nature, however, this cooperative-cognitively strengthened human race caused several waves of extinction. As so often in human history, these were frequently unintended effects of intentional actions. The transition to an agrarian society around 10,000 years ago, which was not least due to the over-hunted animal populations, enabled food surpluses and thus the emergence of property, statehood, law and cultural history (albeit with a more one-sided diet and higher infant mortality). Historically, the logic of using natural resources without taking into account their regeneration rate was already anchored in all this. Too much romanticism about the supposed closeness to nature of the "noble savages" would ignore all these historical facts (for the remaining open questions see Harari 2017; Diamond 1999).

Modern economics, science and technology, modern law, modern accounting and other factors emerged "on their own" only in the West. It was only from here

that they spread. And these external factors have at least historically interacted with each other and with certain worldviews or are part of certain cultures. To this day, “capitalism” and those worldviews in their interaction still essentially shape occidental concepts of normality, habits, ideas of self-interest and, in particular, values (especially on the interaction of capitalism and liberal values and institutions Friedman 1962; Acemoglu and Robinson 2012; more reserved Deaton 2013; Rodrik 2012; see also Jellinek 1996). Today’s “growth game” and the intensive use of fossil fuels have by no means existed in their full form throughout the entire history of mankind. This is not only clear in every historical observation, but it is also highly plausible in view of the fact that human behavioural drivers, such as convenience, could certainly have promoted a rather frugal lifestyle. Consequently, the spread of capitalism and Western culture has progressed gradually for centuries.

Capitalism, Freedom, Democracy, Enlightenment, Protestantism, and How They Are Interconnected

The sustainability-relevant occidental (and gradually exported) cultural history, including capitalism, needs to be illustrated and recapitulated a little further here. The ideal of freedom has brought about the greatest opportunities for self-development and prosperity in the West since time immemorial. And the classical ideal of freedom has more or less realised the social aspirations of the early modern bourgeoisie and afterwards the workers for equal recognition of all people in a society. Moreover, there is a mutual conditionality between individualism and (wealth-creating) capitalism: capitalism can hardly survive permanently without a legal security that is established through the guarantees of fundamental freedom. And individualism can hardly exist without the possibility of personal (also) economic development. Conversely, liberal-democratic ideas would hardly have been implemented so quickly if they had not promoted tangible and “capitalist” interests, for example.

Far-reaching economic freedom, an unimpeded free play of forces, economic growth, prosperity- and technology-related progress and a certain appreciation of work (and thus also jobs) as well as the well-being of one’s own people and industry: In the history of philosophy, this panorama of principles is called classical liberalism. It also includes anthropocentrism, which sometimes forgets that human freedom cannot exist without certain physical conditions (Kim and Bosselmann 2015; Ekardt 2001; Abson et al. 2017; Klaniecki et al. 2018). Whereby this hyperindividualism, as one should perhaps rather call it, classically aimed at economic development; in addition, today, under postmodern auspices, an unrestricted idea of self-realisation and self-optimisation is becoming increasingly influential. All these are values that are typical for modern societies, but that do not fit in well with sustainability. On the other hand, connectedness to nature (Abson et al. 2017) should not be overestimated, since we have seen (in Chap. 2.2) that there are many Westerners with strong eco-oriented values that practice their “connectedness to nature” by travelling to

Fireland, Malaysia etc. all the time. As mentioned earlier, culture is probably more relevant when it influences our selfish calculations and conceptions of normality, not only our values.

In any case, the focus on work and individuality does not originate from the classical liberalism of the Enlightenment, but rather from Calvinist Protestantism that strongly influenced the rise of liberalism (more detailed Ekardt 2001, § 18; Ekardt 2003, pp. 99 et seq. and 112; Ekardt and Richter 2006; partly taking up the thoughts of Weber 2010 and Jellinek 1996; more generally on the Reformation MacCulloch 2004). This is not only true for liberal philosophical thought leaders since the early modern era (who were Protestants) such as Thomas Hobbes, John Locke, Immanuel Kant, Francis Bacon, Johannes Althusius and former scientists and politicians. To an even greater extent, the Calvinist preconception applies to the general population or at least the educational elite in the countries of Western Europe and North America, in which classical liberal ideas in philosophy, economics and law first prevailed.

The Reformation in the sixteenth century articulated a critique of authoritarianism and traditionalism of the Catholic official church, which were perceived as almost hostile to the Bible. From the revolutionary inspiration of the early Christian era, as the actors of the Reformation felt, a bureaucratically administered tradition had developed, which was enforced with official authority and coercion. A caste of “professionally religious” priests and monks was judged greater closeness to god by Catholic tradition through office. The Reformation disagreed; at its core it focused more on the responsible individual. The priesthood of all believers was propagated and the individual was placed in a more direct relationship with God. In addition to this relevant point for modern individualism, a focus on work – in the sense of a “visualisation of the divine vocation” – is characteristic of the emerging Protestantism, as is the striving to realise one’s own convictions in the world. All this promoted the modern ideal of growth and technical progress all for the creation of “paradise on earth”. Religion stimulated economic and technological development and at the same time was under its influence – just as the social emancipation claim of the early bourgeoisie. It drew its self-confidence from its own economic success, in contrast to the supposedly lazy nobility.

Protestant influence has left deep ambivalences in the emergence of liberal democracy and its free economic system. This affects importantly the ambivalence of today’s high standard of living and pronounced personal self-determination, as well as the threat of the destruction of livelihoods and poverty in other parts of the world. As already mentioned, individualism can hardly exist without the possibility of personal (also) economic development, whereby individualism, capitalism and even modern technology were by no means only affirmed in Christian discourse but were long also fought against by certain circles (more detailed Ekardt 2001; Ekardt 2016a, b; furthermore Welzel 2002; Rosa et al. 2014; skipped in Scheidler 2015).

From Ockham and Calvin to Hobbes and Kant

An important step was marked by the Calvinist idea, later adopted by Thomas Hobbes, of the selfishly evil but at the same time very productive human character. As mentioned (in Chap. 2.2), Hobbes doubted in the tradition of Plato and Augustine that altruism could even exist. Like Hobbes and the late medieval philosopher William of Ockham and some others (detailed Ekardt and Richter 2006), the reformers who then influenced Hobbes were apparently sceptical about human reason. First of all, they did not trust humankind to have a “rational knowledge of God” – for human beings seemed to act only selfishly, because since Adam and Eve they had been “evil” because of the original sin. The reformers doubted reason in questions of value and faith and threw themselves entirely on faith and predestination, that is, predestination for eternal salvation or damnation, in their relationship to a God thought to reign arbitrarily. At the same time, however, the Reformation disintegrated the “narrow” medieval world view. The idea of a pluralistic society also arose from individualistic and authority-sceptical tendencies released in this way and from the simple fact of different confessions. It is precisely in this respect that, despite all enthusiasm for ecology, sustainability today also clashes with values – namely the desire not to be hindered in one’s own development and (supposedly) patronised (normative to the paternalism problem in Chap. 3.4; generally to balancing various rights and freedom spheres in Chap. 3.6).

In contrast to Hobbes, Kant introduced the idea that values such as individualism and pluralism can be rationally justified (Chap. 3.1 deals with the point that this idea is not only descriptively influential but also normatively right). Furthermore, the modern idea of democracy, which in turn was rooted in Calvinist concepts of community, as well as the Calvinist struggle against religious oppression is founded in these lines of tradition. Individualism, personal freedom and democracy, together with the striving for legal security and social enhancement of the emerging bourgeoisie, promoted an increasingly economy-oriented idea of freedom. The liberal tradition soon developed into a one-sided anti-state and purely economic liberal concept of freedom, since the state was also exposed as human and thus as “evil”. Freedom of property and religion were crystallisation points of the struggle for liberal democracy in the eighteenth century (Jellinek 1996) and founded today’s one-sided view of freedom.

With all this, there have also been significant changes in occidental thinking over the centuries and millennia (this and the following are traced in Ekardt 2001; generally also Harari 2013; Diamond 1999). Greek antiquity and Germanic thinking were still generally more oriented towards cycles: Growth was not aspired to, technical progress hardly got underway, work and nature conservation were considered only moderately desirable, and freedom did not play an important role. With the medieval monastic movement – a kind of starting point of economic and technical dynamics, which for example also influenced Ockham – and especially with the Reformation, this changed successively.

Incidentally, pronouncing the influence of religious convictions does not mean that religion as the basis of ethics is also normatively convincing. Many people associate directly religion when they think of ethics. But religious morality is based on assumptions that one believes but cannot know: the existence of god and the recognisability of his rules for humans (see in detail: Chap. 3.1 and Ekardt 2016a, § 3 B.). Religion as a combined authority on all issues to do with good life, faith, morality and knowledge of facts: This “historically normal case” gets more and more reduced to perspectives for a good life and religious faith, in which science (normative or descriptive) cannot challenge the field.

All in all, the cultural backgrounds of modern sustainability-damaging values can be traced back far into Western intellectual history – through insights into the emergence of economic systems, modern technology and liberal democracy. Of course, self-interest, concepts of normality and values are also culturally shaped in personal relationships. For instance, regarding how much you expect from a relationship. Rising expectations correspond strongly with social events. For example, if the last war has taken place a long time ago, peace alliances such as the EU suddenly become less popular, and nationalist demagogues are increasingly gaining ground (Ekardt 2017b). As far as sustainability is concerned, this descriptive analysis of values will take us to a normative question in Chap. 3: Can a different, more sustainable legal and ethical interpretation of the core values of liberal democracy be established? The answer will ultimately be yes.

2.6 Do Empirical Happiness Research, Cooperation Research, and Criticism of Capitalism Change Everything?

Many, however, want to go further and demand (a) a pronounced criticism of capitalism, or at least the statement that (b) modern life makes people unhappy and that (c) it is fundamentally cooperative and altruistic. Therefore, the given analysis of the conditions of social change should be supplemented and modified (Jensen and Scheub 2015; Schulz and Bailey 2014; Scheidler 2015; cautious Muraca 2015 and Easterlin 2005). In order to examine what has been said and because of the potential motivational power of actual promises of happiness for the difficult change in technology and frugality (Chap. 1.3), this must now be investigated. The question of a normatively correct happiness, however, is another issue; it will be shown later that no objective answer to this is possible (Chap. 4.4). Likewise, the question of whether humans should (!) be altruistic is only the subject of Chap. 3 on normativity.

Do Wealth and Capitalism Make Us Unhappy?

The public discussion about whether Western prosperity really makes someone happy is a little strange. In industrialised countries only a small, relatively closed circle of people is open to this topic, at least if one does not count purely verbal

statements, but expects implementation in one's own behaviour to a certain extent. For that small group of people who may not always be aware of the degree of divergence with almost all fellow human beings, it seems unquestionably established that nothing better could happen to humanity than less orientation towards material things (Paech 2012; Welzer 2013; Jensen and Scheub 2015; Schulz and Bailey 2014). Consumerism and an achievement-oriented society allegedly makes people unhappy. Happier, however, are those who concentrate on ideals, spend a lot of time with friends and family and possibly still live in a commune. In any case, material prosperity allegedly cannot make one happy. If that is true, a turnaround in energy and climate and a change in sustainability in general, also using frugality strategies, is actually a programme of happiness. If this were true, one had reason to wonder why there is no large majority massively in favour of this programme.

In real life, on the other hand, the vast majority of the inhabitants of Western industrialised countries and the upper class of the emerging countries follow the motto: more material prosperity and consumption. Even if many people do not talk that way, the real purchase of products and services points in this direction. You often do not even notice it – because everyone around you also has a large apartment, a lot of entertainment electronics, a state-of-the-art car and regular long-distance travel. In all this, it must be taken into account that surveys in particular often do not convey a very reliable picture (Chap. 1.7), especially since cultural factors influence the way people perceive and describe themselves, particularly in terms of happiness – and since occidental concepts of happiness have been oscillating more or less diffusely between an unease to live in the modern age and an enthusiastic reaching for the stars. Nevertheless, some statements can be made with high plausibility:

- First, we should define what we are talking about when using the term happiness. It is understood here as the overall satisfaction with one's own life. So, it is not about the spontaneous good mood today, and it is not about whether you are more of a jolly person or not; the latter is seemingly innate and has little to do with overall satisfaction right from the start (see in detail Deaton 2013).
- Happiness in the sense of satisfaction depends according to all empirical findings on the two relations “what do I want versus what do I have” (although these expectations are higher today than before) and “what do I have in relation to the others in my surroundings” (Deaton 2013; Muraca 2015; Frey and Frey Marti 2010; see also Esch 2014). Taking this into account, there is no need to argue about whether wealth makes people happy or whether comparatively poor people in developing countries can be as happy as richer Westerners are – both can be true. On the one hand, one likes to measure oneself against one's surroundings and can therefore, as long as there is no existential need, be equally satisfied with very different levels of material wealth, as long as it is more or less in line with what others in sight have. On the other hand, it is also very human to be happy to be better off than others; consequently, increasing prosperity and increasing happiness (albeit with a flattening curve) are quite correlated (see in detail on all the statistical data Deaton 2013). Again, it is not the absolute wealth alone that is decisive, but whether the own situation is good compared to other people's. Also,

declining from a lifestyle that has become a habit and a concept of normality is to be avoided at any cost (Deaton 2013, pp. 23 et seq.; Frey and Frey Marti 2010, pp. 47 et seq.; ambiguities arise since statistical correlations do not reveal everything; e.g. does income lead to more happiness or does happiness with a higher probability lead to more income?). Ultimately, this quest for visibility is also rooted in an emotional desire for recognition. Likewise, more money simply also means (statistically) greater chance of leading a long life in health, a good education for the children, increased personal independence, etc., which is desired particularly but not only in Western cultures (Deaton 2013; Fücks 2013). So, it cannot be said that growth and happiness coincide per se or fall apart per se. It therefore makes sense to try to measure well-being more complexly than by simply referring to economic growth (see, for example, OECD 2015; Stiglitz et al. 2009; Enquête Commission 2013; Jakob and Edenhofer 2014).

- Insisting that a frugal world with less work and more time for friends, family and hobbies would make everyone happier per se is too easy as it runs contrary to this differentiated finding above explained. While it might be true for some or many, it is hardly true for all. You can imagine to have more time for the family, but you quickly overlook the ambivalences and the by no means inevitable pleasure from it, as long as it is a theoretical situation. It is also known (Chaps. 1.7, 2.2 and 2.4) that attitudes and behaviour often show big discrepancies – and that people’s real preferences become much clearer when one considers their behaviour instead of their statements. The objection that preferences are “distorted today” is hardly convincing in this respect, as becomes clear in the second part of this section. The assertion that people are increasingly exposed to diseases such as burnout due to increasing pressure, which is then attributed to globalised capitalism, and thus people are clearly unhappier than just stated (Paech 2012), is on closer inspection doubtful at the least. This is not only because people are assumed to not know at all (in their everyday behaviour, e.g. buying a lot etc.) what could make them happy. In addition, burnout as diagnosis can also be challenged as a supposedly clear clinical picture (detailed Hasler 2012). Furthermore, there are aspects of self-interest that may explain the exponentially increasing quantities of psychotropic drugs just as well or even better than the allegedly too strict globalisation. It is not only about career-oriented scientists and some sensationalist media. Rather, the real and alleged findings about the brain also serve to facilitate the mass sale of new psychotropic drugs. For if every variety of depression is interpreted as a novel disease, such as burnout or anxiety disorder, which is then attributed to a certain brain structure in conjunction with the neurosciences (Chap. 2.3), then the path to marketing diversified drugs developed just for this purpose is mapped out. Many pharmaceutical companies administer very lucrative research contracts for this purpose. These analyses do not rule out that the modern accelerated and the increasingly flexible world does not in fact clearly challenge a frequent human desire for stability (Sennett 2006; Fromm 1996).
- For human happiness in the turnaround in energy and climate change this means: Frugality is ecologically necessary (Chap. 1.3) but is not per se a programme of happiness for everyone. But if all of us adjust together, a material decline would

not necessarily be unpleasant for people in the industrialised countries, provided it affects everyone and does not occur as an abrupt loss, as has been the case in the euro-crisis countries since 2010. Maybe then at least many people could experience the desirable aspects of clearing out and deceleration (Schneidewind and Zahrt 2013). In view of the many obstacles (Chap. 2.4), however, it could become quite difficult to actually initiate such a process (more specifically Chap. 2.7). Yet there are several new aspects in the future that should reinforce the positive effects of a change in sustainability: While some previous burnout findings may be doubtful, it must be borne in mind that globalisation and, with it, the “constraints” of global competition are likely to become ever greater (Chap. 4.11). This potentially causes an increasing “colonisation” of the formerly “private” living environment through work and economic aspects (classically Habermas 1981). That humans as finite beings can follow an infinite spiral upwards of performance requirements is doubtful despite all the ambivalences therein (Chap. 1.4). Another aspect influencing happiness in the foreseeable future is likely to be even more drastic: conflicts over dwindling resources, natural disasters and similar consequences of climate change.

The descriptive findings on sustainability, transformation and happiness thus remain more differentiated and have not yet changed the results (for criticism of a normative ideal of happiness, see Chap. 3.4).

Back to Marx: Overestimated Criticism of Capitalism – Are Human Beings Really “Cooperative” and “Altruistic”, and What Would This Mean?

Closely interwoven with the focus of happiness, however, is the anthropological counterthesis to the motivational analysis developed above that humankind is actually much more cooperative; this is predominantly associated with directly advancing criticism of capitalism (Klein 2014; Jensen and Scheub 2015; Fromm 1996; Hosang et al. 2005; cautious Muraca 2015). Allegedly, people only become selfish because of capitalism. If this were only finally acknowledged, people would be happier being essentially cooperative and altruistic instead of selfish and the social circumstances would liberate us from competitive pressure. Certainly, economic cooperation research is somewhat very fixated to its game-theoretical basis, homo oeconomicus and the considerations of the self-interested players in cooperation (for example MacKay et al. 2015; Buchholz et al. 2014). However, it has already become clear that this is one-sided and also too experimental (Chaps. 1.7 and 2.3). Nevertheless, it remains true that self-interest and altruism coexist in humans:

- People do not cooperate all the time. This alone speaks against interpreting human self-interest as a consequence of a capitalist cultural framework without any influence of biological aspects. The enthusiasm of people for sports

competitions, where competing groups such as football teams compete against each other with universal enthusiasm, is also plausible due to the sociobiologically diagnosed tendency to group egoism (Wilson 2012; Nowak and Highfield 2013; Tomasello 2017; Dawkins 1976; Thornhill and Palmer 2000). Apparently contradictory findings by Elinor Ostrom (1990) refer to small, demarcated problems and small communities that facilitate joint decision-making, mutual control, trust, willingness to cooperate and unbureaucratic conflict solutions (Nowak and Highfield 2013). However, this is no longer possible with highly aggregated decisions. Moreover, we will see (in Chap. 3.6) that a high number of participants combined with numerous solution options, as they inevitably arise with regard to global problems, undermine any “simple” compromise from the outset.

- Even when people actually cooperate, pure altruism is often unlikely. It can also be shown experimentally that altruistic cooperation occurs primarily when it promises emotional identity (Diekmann 2009; Irrgang 2001). Rather, cooperation largely relies on direct or indirect reciprocity (via compensation or reputation), on sacrificing oneself for a then generally more successful group (even in a harmless form such as sports competitions), or on favouring relatives (these differentiations are often neglected in economic research – see for example Buchholz et al. 2014; very clearly Irrgang 2001). At best, cooperative actions mix selfish and altruistic tendencies. These findings from sociobiology (see Chap. 2.1 and Wilson 2012; Blackburn 1998; Gommer 2014; Wilson 2014; Nowak and Highfield 2013) based on a broad observation of human and animal behaviour, which also fit solely to the evolutionary origin of humans from competitive constellations, also explain that cooperation works especially in small groups such as families. But cooperation does not work very well if the climate is to be saved worldwide. Then real altruism would be in demand (even if only partially). And here, it is obviously anything but easy. In short: In the history of evolution over the millenia, people have learned to divide things within small groups because food could not be stored and because they were unable to survive individually – but sustainability requires much more. And even in the Stone Age, fictitious fairness may have already offered selection advantages compared to real fairness; it is therefore no coincidence that those tendencies can still be found in human behaviour today. Purely in their verbal explanations, people can distance themselves sometimes quite well from their biological heritage. In real behaviour, however, only very few people make it – a climate-friendly rhetoric is easier than doing without holiday flights and meat.
- Historical findings support this. It is true (Chap. 2.5) that modern capitalism entangled with democracy, human rights, legal forms, etc. still shapes human behaviour such as self-interest, concepts of normality and values as important factors among others (!). However, a society containing self-interest, large income disparities, power relations, etc. already existed worldwide before capitalism, i.e. precisely not dependent on capitalist culture (many examples are provided by Scheidler 2015; Harari 2013). Experience in historical times, for example with the Huns and Mongols and their orgies of robbery and violence,

which are quite unique in human history, also underline that no sophisticated system of private property and land appropriation or even capitalism is needed to trigger abusive human behaviour. And even if life would have been more cooperative under imaginary Stone Age conditions, this was due to the fact that things simply could not have been different under Stone Age conditions and this is precisely why human cooperation as well as language and culture emerged (closer Tomasello 2017; Wilson 2012; Harari 2013). Furthermore, it remains questionable whether a return to that world is desirable or not, especially with the expectable extent of social control at the time. Last but not least, Stone Age conditions can no longer be meaningfully reconstructed today.

- Ultimately, today's level of prosperity evolved also due to competition for the best solutions – and not only to cooperation (Nowak and Highfield 2013; Tomasello 2017; Acemoglu and Robinson 2012). Focusing alone on the sometimes severe (especially sustainability) problems of capitalist economic activity would appear one-sided, even if one were to focus solely on developing countries, for example. Maybe “capitalism” has often not contributed to the promotion of altruistic tendencies. However, modern capitalism is also the cause of the modern welfare state and the overcoming of mass poverty, infant mortality, etc. in Europe and North America (and major parts of East Asia and South America). Capitalism, and state socialism, on the other hand, primarily have environmental damage in common, but not prosperity. Consequently, the competitive world is not driven solely by large companies. We are all closely intertwined with the world of growth through jobs, consumerism or pension funds that own companies through share packages (Chaps. 2.1 and 4.2). The error of opposing views on this lies along the lines of the idea that the various grievances in real socialist states are to some extent solely due to a continuing “false consciousness” and not also to human nature. In this respect, it is hardly surprising that the path to a “new kind of human being” led Marx, or even more so Stalin, Mao and the Khmer Rouge, through a “dictatorship of the proletariat” and the Gulag (overlooked by Fromm in 1996; correct in Steinberg 2013, pp. 129 et seq.; see also on some problems of real socialist economies Acemoglu and Robinson 2012: elites and losers in extractive economies prevent change; bonus systems in socialism are not as effective as free competition; elite struggle; council democracy as an arrangement that is not equally stable and safeguards freedom as representative democracy with balance of powers – on this in Chap. 3.5).

Given Hegel-Marx's dialectical methodology, it is hardly surprising that an empirically unconvincing anthropology is offered by Marxist-inspired voices, which ultimately identifies supposed historical laws similar to those of science in a fundamentally unclear way and thus sometimes massively distorts the history of the world. Simple truths may appeal to many, but they only make a limited contribution to finding knowledge (see in detail Ekardt 2017b). It is discussed later that the normative side of Marxist approaches (camouflaged as the supposed recognition of irrefutable historical laws) is not convincing either (Chap. 3.1). Combining Marxism with constructivist ideas (criticised in detail with regard to its logical

inconsistencies in Chap. 1.6) – as it is done very often in humanities today – would make things even worse.

All this is a critique of a behavioural approach that expects too much from happiness research and criticism of capitalism, however relevant both can be. Despite this criticism, the findings obtained in Chap. 2 remain valid. Nevertheless, it has already become clear (in Chap. 1.4) that a serious change regarding energy and climate could herald the end of the growth society, which would also be the end of capitalism in its present form. The challenge will be to constructively shape the, sometimes far-reaching, consequences (Chap. 1.4). In all this, concepts such as market, capitalism and globalisation should not simply be equated. And the attribution of all sustainability challenges to the entrepreneurs, who ensured the exploitation and alienation of the imaginary masses, is not very convincing due to its one-sidedness (Chap. 2.1). Questions should be considered separately as to whether modern capitalism requires stronger regulatory containment (Chaps. 2.7 and 4.2) and how competition and free trade (Chaps. 4.2 and 4.11) should be regarded as a means of achieving sustainability goals.

2.7 Politics, Corporations, Citizens, Interest Groups and Other Stakeholders: How Change Is Possible in a Ping-Pong – Not in a Chicken-and-Egg Game

Until now, it has become clear that change in general and especially the transformation towards sustainability is difficult. Sustainability brings together the different behavioural factors in an unfavourable way, just like in the burning glass. But how can change be initiated constructively? And which motivating factors can be taken up and how – and where will efforts for change per se be hopeless? As has already been stated (in Chap. 2.1), change, because of the interdependencies, always presupposes an interplay of different actors – such as politics, companies, lobbyists, the media and all of us. This section is about to what extent one can or cannot transform individual motivational factors. Generally speaking, things can change fundamentally; socialisation is an ongoing process. Which concrete individual actions (e.g. which political measures) the actors would have to take, will be dealt with in detail later (Chap. 4).

As we will see in the following, one can draw conclusions from the findings on the behavioural factors analysed in this book as to whether and how certain points can be addressed. But in an unprecedented situation such as the existential challenge of global environmental challenges, one cannot expect anyone to be able to precisely trace what works and what does not, for example, on the basis of historical examples or practical experience. The necessary measures, such as a full phase-out of fossil fuels within a few years, are so extraordinary that they simply did not yet exist. This is often overlooked when someone calls for “best practice examples in other countries” or the like. These examples simply do not exist for really radical actions (for overarching perspectives Ekardt 2016a; Baumeister and Tierney 2011; Kristof 2010). However, as already mentioned, concrete measures will be addressed a little

later anyway (Chap. 4). Now it is a question of how the motivational factors of a large number of players can be set in motion.

The Easy Part: Knowledge, Self-Interest, Values, Path Dependencies

(1) The first behavioural factor to analyse regarding its potential to be activated for change is knowledge. Certainly, knowledge is an important part of change. If I do not know that smoking is carcinogenic, I will see no reason to quit smoking. Social change also involves new knowledge, including new technologies, including the topic of sustainability. Moreover, like all of the following points, the expansion of knowledge is only possible in an interplay between different actors. Policymakers must lay down rules for greater transparency, and citizens and businesses must urge policymakers, for example, to set a framework for better information and support for promising research. But as I said: knowledge is not the only and not the most important point (Chap. 2.2).

(2) Furthermore, as sustainability problems such as climate change are problems of collective goods – as well as of path dependencies – they require political-legal and thus generally binding rules. This is necessary so individuals do not have to adjust according to their own appreciation and have the impression, for example, that their own actions fail in the absence of the participation of other people. Instead, people will proceed cooperatively in the sense of reciprocity. As we will see, it is conceivable that fossil fuels will gradually become scarcer and thus more expensive. This also reflects the bourgeois and entrepreneurial self-interest that reacts to prices. Through political and legal regulations, path dependencies can be minimised or overcome. For example, if new permits for coal-fired power plants or for energy-inefficient houses are prohibited, long-term specifications for these technologies are avoided. Likewise, changing institutions such as administrative structures can help to establish a new way of thinking. *Nota bene*: Here, as elsewhere, someone has to fight for such political rules.

(3) The fact that clear guidelines including clear sanctions help directly marks the next point: the reconsideration of previous self-interest calculations. It is already historically obvious that self-interest calculations are human but can be strengthened or weakened and thus change. Also, people can understand very different things as personally useful for them, both in the course of their lives and in the course of human history, depending on their cultural background. Certainly, many people, companies and political actors, especially in fossil fuel companies and oil-producing countries, are currently not very interested in better global climate protection, for example. In the long term, however, sustainability is beneficial for almost everyone and so is therefore a policy that, for example, gradually removes fossil fuels from the market. Policies like these would exactly steer the self-interest in a different direction. It is not easy to implement such a policy at high speed because of the interplay between the actors and the risk of getting voted out of office – although we actually have no time to waste regarding climate change, for example.

It is particularly helpful when there are also concrete advantages that can be seen in the short term. It should be taken into account that people – even in the area of their selfish calculations – do not pursue exclusively economic interests and therefore a tendency to only discuss the profitability of sustainability measures (i.e. whether it is possible to save money with energy-saving light bulbs or not) falls short. Climate protection, for example, usually does not have a directly positive effect. But if fossil fuels are pushed back in terms of climate policy, this promotes health, for example through reduced air pollutants. Also, refugee numbers would be reduced because the conflicts in the Middle East are significantly fuelled by our hunger for oil. In addition, from a perspective of social distribution climate protection can be interesting, because the impacts of climate change will hit the socially weak hardest (in detail see Chap. 4.7). Clear political and legal guidelines and thus the same standards for everyone are also most acceptable for companies, at least if they take an international and cross-sectoral approach. Business and citizens should also build political pressure in all these directions if they take themselves and their own room for manoeuvre seriously (Welzer 2013; Gough 2017); and we can all reflect on our own benefits and try to focus more strongly on the long term. Politics does not exist independently of the other stakeholders. Without this political pressure, there will be no other policy.

On the other hand, the hope expressed by some people (e.g. Klingholz 2014) that the growing pressure of the crisis alone will change things for the better would be overoptimistic. One should rather not hope for this, especially since there are only a few obvious problems. Politicians, entrepreneurs, lobbyists and all of us must take action ourselves.

(4) It is also possible and urgently necessary to intensify the debate about a change in values or convictions in society and companies, parting with the belief in growth and the dominance of nature and away from an understanding of freedom that is primarily realised in a consumerist way, regardless of the consequences. By combining factual knowledge and values, the need for ecologically-based measures can be presented very convincingly – especially if the change is to be carried out jointly by all (Linz 2012, pp. 102 f.; Heyen et al. 2013, p. 20). The good human rights reasons for sustainability in particular are still being discussed in detail when it comes to the normative aspects of sustainability (Chap. 3). The relevance of values for actual behaviour is, as we have seen (in Chap. 2.2), often overestimated. At the same time, a normative vision is important not only in terms of values – but also in order to be able to break through concepts of normality and emotionally entrenched habits. Clear goals can have a significant impact; you notice that when you want to change personally.

Even if they cannot be generalised normatively (Chap. 3.4), personal questions of happiness are essential, too. A lot of potentials to increase happiness through sustainability have already been mentioned above (when discussing self-interest as well as in Chap. 2.6). However, the following point seems to be also important: Our modern problem, which increases in a “post-religious” time, that one day we will die and that we must give our lives a meaning, will neither be solved by consumerism nor by a strict post-growth orientation. Ultimately, for sustainability perhaps a

misunderstanding would have to be eliminated. This means that a misunderstanding that stands at the beginning of the finalistic thinking of the Christian liberal tradition and which may still block a comprehensive sustainability of our thoughts and actions today: The history of the resurrection is mostly read as the promise of eternal life in an end-time paradise to be sought. From this, a devastating economic-technical vision consisting of eternal growth and progress, which is hoped to lead to material states of paradise. But is the “conquest of death” in the Gospels perhaps rather based on an inner fact? Perhaps the key message of the New Testament is rather: new life arises from death. Not in the sense of a physical individual life for all eternity – but as a reminder that life and death are indissolubly tied together and the most psychologically difficult task of a human is not to run away from the definitive finiteness of their existence. To turn to those ideas, however, does not seem to be conducive to happiness for everyone (see our analysis on happiness research in Chap. 2.6). How it is possible to make sense of life under meaningless (no longer so much driven by existential problems and hardships) basic conditions obviously exceeds the topic of this book (see also Harari 2013). In any case, turning to other people or hoping for their immediate or later recognition does not answer the question, but only shifts it to these other people. Quite meaningful could be an objective normativity in questions of justice, which one cannot escape (Chap. 3.1 on its existence). Conversely, in Buddhist tradition we could rely on consistently enduring senselessness; this and the ethical path, by the way, are combined within some Buddhist tradition strands in the so-called *Bodhisatva* ideal. A rather pragmatic approach is to focus on knowledge of oneself and personal development as meaning substitutes. To be able to learn, to be healthy, to have time, to develop. The sunshine, the people, the seasons, the nature, the inner peace – all this may possibly give more happiness than to compensate yourself for your own stressful life with more and more new purchases (Jackson 2009; Paech 2012; Welzer 2013). That is one way of looking at it. The reality in Western societies is, however, tendencies such as short-term self-interest, slowly changing concepts of normality, convenience, denial, human striving for more and for status symbols etc. Instead of receiving recognition through the consumption of goods, it might deeply fulfill some people to grow beyond themselves and to achieve what actually distinguishes humans from animals, namely the ability to learn. Others, however, will not be convinced by that.

The Difficult Part: Emotions and Concepts of Normality

(5) Concepts of normality form another starting point for social change and transformation towards sustainability. These concepts change constantly anyway, albeit slowly and rarely systematically. In principle, we all can question and revise them every day. This applies equally to citizenship, business, politics and other stakeholders such as scientists, lobbyists, etc. Concepts of normality, however, do not follow a master plan, and with the high inertia of such ideas one has a problem, especially since they move in the rather unconscious or semi-conscious mental area. Therefore, concepts of normality might be more important than values for our every-day

behaviour, but more difficult to address. As already mentioned, the idea of normality is potentially influenced by the price of a good (such as oil). The idea, for example, that a television or a washing machine or a holiday flight to Malaysia is characteristic of a “normal” household would hardly have been established if these goods were very expensive.

Furthermore, in terms of concepts of normality, everyone can begin to question even the previously unchallenged issues in their own life plan, at least with a certain amount of effort. And more importantly: try other life practices, talk to others about it, look for allies and be a role model for each other, do not let yourself be discouraged by setbacks. Alliances such as environmental associations or grassroots initiatives, which build up pressure, exemplify changed lifestyles and alternative economic practices, develop positive visions (according to our values), but at the same time also illustrate the possible catastrophic consequences of non-action. It is equally important to lift the suppression of the creeping change from normalities to more and more prosperity.

In addition, role models which are consistent in their actions play an important part; this might be politicians, show stars, entrepreneurs or other publicly visible persons (see also Stengel 2011). Many alleged role models, however, are rather moderately suitable at a closer look. Nobel Peace Prize winner Al Gore, for example, may have contributed a lot to the discussion about climate change with his film “An Inconvenient Truth”. At the same time, flying constantly, living in a very large house, not addressing the need for clear changes in behaviour and not stepping out as a climate pioneer in his time as US Vice President enforces the current lifestyle more than it does a sustainable one. So far, we are waiting in vain for a politician or show star who says: “I eat vegetarian, do not fly on holiday, do not drive a car on a daily basis, do not jump through the overheated apartment in winter in a T-shirt – and I feel morally good and am perhaps even much happier than many others”. There is a number of people who perform individual symbolic actions. However, a broad-based change in technology and behaviour almost never occurs.

All this is also important because the creation of new concepts of normality amounts to a denunciation of conformity with the personal social environment. This is more successful, as we know from historical examples (for example from Nazi resistance research) and from the human propensity to conform, if one experiences support by others, to which, besides alliance partners, also role models belong (Welzer 2013; Janis 1972). It is also helpful not only to clearly identify and address political visions and measures, but also the obstacles (Heath and Heath 2013) – in sustainability issues such as climate protection, this would be for example the distribution of costs and solutions for regions previously dominated by fossil fuels. Starting small and working towards new habits and identities, preferably with reference to already existing practices, is of key importance (Heath and Heath 2013). It is important to consider normality concepts and self-interest calculations in connection. If – as we have already seen – change promises health benefits, or aesthetic and monetary rewards, this is also very helpful.

While better energy and climate policy depends on change in all of us in terms of our concepts of normality, it can in turn shape this change (given that someone

fighters for such a policy). Learning processes, be it in the case of concepts of normality or in the case of values that are rationally accessible in themselves, certainly take time. As we have already said because of the interplay of the actors, smooth transitions are most likely, which at the same time meets economic self-interest calculations in the sense of planning security.

(6) A great challenge for all actors remains that much can be changed – but probably not the basic human feelings. Emotions in particular refer to biological foundations that may be transformed but can hardly be completely eliminated (Chap. 2.4). Even new conceptions of normality cannot really be planned on the drawing board. More than ever, it will be extremely difficult to put into perspective fundamental human emotions such as our tendencies towards convenience, habit, denial, short-sightedness, or disinterest in problems of spatial-time complexity. After all, one can partly (but not always and not completely) control and examine feelings in individual cases, and one can try to address aspects such as compassion (experimental psychological findings offer Heath and Heath 2013, p. 285 and passim; Liedtke 2011, pp. 37 et seq.).

Other important starting points for action in terms of emotions are ultimately the same as with concepts of normality. It will hardly be possible to change the fact that people, for example, tend to repress climate change and do not find it spontaneously important because of its complexity and supposed distance. But if you understand exactly this problem, you can try to build your own bridges by looking for allies, discussing with others, forging alliances, finding role models and trying other ways of life and business in an individual setting. Politics can hardly counteract the propensity to repression per se, but it can counteract if, for example, energy is specifically made more expensive and the relevance of this factor becomes more visible on a daily basis; it is also common from experiments that forcing active decisions prevents repression processes (Engel and Kurschilgen 2015; Nowak and Highfield 2013, pp. 292 et seq.). And as already said regarding values and even regarding concepts of normality: one can try to address one's feelings through a positive vision or "history" that can cope with the supposed lures of consumer society (Welzer 2013, pp. 146 et seq. and 248 et seq.; Heyen et al. 2013, p. 20). The change to sustainability could have potential for happiness; and the joint struggle for a better world as such can also be fun, strengthened for example by creative forms of protest (and of a new lifestyle).

However, all this is not easy to realise, because mass consumption appeals far more directly to various other human motives than moderation and its "successes". The fact that people can get into collective mass hysteria during wars or shoot each other due to scapegoating does not mean that they automatically pursue much more abstract and complex objectives like sustainability with the same verve. As I have already said, the complexity of sustainability problems is much less in line with our Stone Age emotions than the simple truths and solutions of some authoritarian governments. It is also difficult, even for groups willing to change, that mechanisms of self-censorship and a certain aversion to criticism occur, i.e. when a group establishes a new orthodox internal world (Kristof 2010), which rather offers no connectivity for a major common process of change. Parts of the post-growth

movement and the Marxist critique of capitalism are examples of this. This can partly be explained historically: Like any alternative movement – and Marxism too, by the way – environmentalists and post-growth fans are ultimately influenced by the controversial patterns of the various Protestant groups in the early modern era (on the history of Protestantism see MacCulloch 2004; Weber 2010; Ekardt 2001; Jellinek 1996). They sometimes found the dispute over pure doctrine more important than fighting together against the Catholic Church and aristocracy. This was brilliantly caricatured in the film “The Life of Brian” by Monty Python in the wild 1970s, in which the revolutionary splinter groups of the Judean People’s Front and the People’s Front of Judea are inconsolably in a clinch.

If all steps outlined have not yet been implemented enough, it is also because it is still not enough for me as an individual to take this or that step. Many others have to do the same, which is much more difficult than if only I personally wanted to change my means of transport, my heating behaviour and my diet. In addition, politicians, entrepreneurs, citizens, representatives of associations and other parties involved are linked in vicious circles that block each other. Of course, it is true that all this is not easy to solve; and this is precisely why others focus more on the more easily accessible points such as connectedness to nature, restructuring institutions or knowledge (Abson et al. 2017; Klaniecki et al. 2018). According to what we have said about the limited effect of these factors (despite all their relevance; see Chaps. 2.2, 2.5 and 3.5), however, this will not achieve the far-reaching objectives of the Paris Agreement, for example. Whether such a limited but feasible strategy makes more sense than an ambitious and more visionary one (as I pursue it) is an open question. Ultimately, in practice both are usually necessary.

As mentioned earlier, everything that has been said does not only apply to sustainability issues or even political issues in general. Also, if I want to change my daily life in any other way, I have to actively tackle path dependencies, make new self-benefit calculations, outwit my concepts of normality with the approaches mentioned, and so on. In any case, there is no need to separately mention factors such as (according to Heyen et al. 2013) changed markets, new technologies or changed infrastructures as separate factors of change. These points are subsumed in the categories of knowledge, of concepts of normality and of changed self-interest calculations, for they do not exist as entities independent of human beings. Also, theories about different stages in which reception, thoughts and behaviour supposedly follow one another are unnecessary. For these stages are likely to differ in every situation and for every person.

All in all, here is what is new about the author’s theses (in Chap. 2): They offer (based on triangulation of methods) a complex behavioural approach of how human motivation and individual and social change function without the constraints of economic, sociobiological, sociological, etc. approaches – without exaggerating the limited effectiveness of factual knowledge and values. And all this is offered without relying too much on experiments and surveys.

Repetition Questions

1. If social change – as with sustainability – does not make sufficient progress, is it caused by politicians, citizens (or consumers), entrepreneurs, scientists or other actors? (Chap. 2.1)
2. Is “individual versus structure” or micro versus macro a meaningful distinction in research on behaviour and societies? (Chap. 2.1)
3. What are the essential factors of human motivation? (Chaps. 2.3 and 2.4)
4. To what extent is the influence of knowledge and values on actual human behaviour overestimated? (Chap. 2.2)
5. What is meant by the “cultural” and the “biological” side of human behaviour, and why is the denial of one of the two factors unconvincing, as, for example, done in the dispute over sociobiology? (Chaps. 2.3 and 2.5)
6. To what extent is the term capitalism often misunderstood, and why does criticism of capitalism often proceed from false premises? (Chaps. 2.6, 1.4 and 4.2)
7. To what extent is happiness research overestimated in its significance for sustainability, and why is it nevertheless important? (Chap. 2.6)
8. What misunderstandings are there about the concept of cooperation, and what role do different forms of cooperation play in human interaction? (Chap. 2.6)
9. To what extent is the Marxist contribution to both descriptive and normative social research partly problematic? (Chaps. 2.6 and 3.1)
10. How can a ping-pong of social change towards sustainability between different actors and related to different behavioural factors work, and to what extent should chicken-and-egg games be avoided? (Chaps. 2.7 and 4.2)

Bibliography¹

- Abson, David/Fischer, Joern/ Leventon, Julia et al.: Leverage points for sustainability transformation, *Ambio* 2017, pp. 30 et seq.
- Acemoglu, Daron/ Robinson, James: *Why Nations Fail. The Origins of Power, Prosperity and Poverty*, London 2012.
- Akerlof, G.A./ Shiller, R.J.: *Animal Spirits. How Human Psychology Drives the Economy, and why it Matters for Global Capitalism*, Princeton 2009.
- Axelrod, Robert: Schema Theory. An Information Processing Model of Perception and Cognition, *American Political Science Review* 1973, pp. 1248 et seq.
- Bamberg, Sebastian: Changing environmentally harmful behaviors: A stage model of self-regulated behavioral change, *Journal of Environmental Psychology* 2013, pp. 151 et seq.

¹In accordance with legal practice, parliamentary, governmental and EU Commission documents as well as laws and judgments are not listed in the bibliography, as they can be found unequivocally on the basis of the reference given in the continuous text or via the general search engines. The last access date for all internet sources is 31/07/2018.

- Baumeister, Roy/ Tierney, John: Willpower. Rediscovering the Greatest Human Strength, New York 2011.
- Beck, Ulrich: Risikogesellschaft. Auf dem Weg in eine andere Moderne, Frankfurt a.M. 1986.
- Bedall, Philip: Climate Justice versus Klimaneoliberalismus?, Bielefeld 2014.
- Berger, Peter/ Luckmann, Thomas: The social construction of reality, London 1966.
- Blackburn, Simon: Ruling Passions, Oxford 1998.
- Buchholz, Wolfgang/ Peters, Wolfgang/ Ufert, Aneta: Spielräume für uni- und multilateralen Klimaschutz, ZfU 2014, 326 et seq.
- Bussemer, Thymian: Die erregte Republik. Wutbürger und die Macht der Medien, Stuttgart 2011.
- Dawkins, Richard: The Selfish Gene, Oxford 1976.
- de Lovinfosse, Isabelle: How and Why Do Policies Change? A Comparison of Renewable Electricity Policies in Belgium, Denmark, Germany, the Netherlands and the UK, Bruxelles 2008.
- Dean, Jeremy: Making Habits, Breaking Habits. How to Make Changes that Stick, London 2013.
- Deaton, Angus: The Great Escape. Health, Wealth, and the Origins of Inequality, Princeton 2013.
- Diamond, Jared: Collapse. How Societies Choose to Fail or Succeed, London 2005.
- Diamond, Jared: Guns, Germs, and Steel. The Fates of Human Societies, London 1999.
- Diekmann, Andreas: Der Mensch – Altruist oder Homo oeconomicus? Ergebnisse experimenteller Spieltheorie zum Altruismus, Forschung und Lehre 2009, 558 f.
- Droste-Frank, Bert et al.: Improving Energy Decisions. Towards Better Scientific Policy Advice for a Safe and Secure Future Energy System, Heidelberg 2015.
- Easterlin, Richard: Building a Better Theory of WellBeing, in: Bruni, Luigino/ Porta, Pierre Luigi (Ed.): Economics and Happiness – Framing the Analyses, Oxford 2005, pp. 29 et seq.
- Ekardt, Felix/ Richter, Cornelia: Ockham, Hobbes und die Geburt der säkularen Normativität, ARSP 2006, pp. 552 et seq.
- Ekardt, Felix: Auf der Suche nach dem verlorenen Sinn, ZEIT 19/ 04/ 2018.
- Ekardt, Felix: Wir können uns ändern. Gesellschaftlicher Wandel jenseits von Kapitalismuskritik und Revolution, München 2017a.
- Ekardt, Felix: Kurzschluss. Wie einfache Wahrheiten die Demokratie untergraben, Berlin 2017b.
- Ekardt, Felix: Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel, 3rd ed. (= 2nd ed. der Neuausgabe) Baden-Baden 2016a.
- Ekardt, Felix/ Unerstall, Herwig/ Garske, Beatrice (Ed.): Globalisierung, Freihandel und Umweltschutz in Zeiten von TTIP. Ökonomische, rechtliche und politische Perspektiven, Marburg 2016.
- Ekardt, Felix: Umweltschutz durch Zivilrecht – Nachhaltigkeit durch Kapitalgesellschaftsrecht?, Zeitschrift für Umweltrecht 2016b, pp. 453 et seq.
- Ekardt, Felix: Liberalismus, Besitzindividualismus und Handlungstheorie, Leipzig 2003.
- Ekardt, Felix: Steuerungsdefizite im Umweltrecht: Ursachen unter besonderer Berücksichtigung des Naturschutzrechts und der Grundrechte. Zugleich zur Relevanz religiösen Säkularisats im öffentlichen Recht, Sinzheim 2001.
- Ekins, Paul/ Meyer, Bernd/ Schmidt-Bleek, Friedrich/ Schneider, Friedrich: Reducing Resource Consumption. A Proposal for Global Resource and Environmental Policy, in: Angrick, Michael/ Burger, Andreas/ Lehmann, Harry (Ed.): Factor X. Policy, Strategies and Instruments for a Sustainable Resource Use, Dordrecht 2014, pp. 249 et seq.
- Engel, Christoph/ Kurschilgen, Michael: The Jurisdiction of the Man Within – Introspection, Identity, and Cooperation in a Public Good Experiment, Preprints of the Max Planck Institute for Research on Collective Goods, Bonn 2015.
- Enquête Commission „Wachstum, Wohlstand, Lebensqualität“ des 17. Deutschen Bundestages: Schlussbericht, 2013, BT-Drs. 17/ 13300.
- Esch, Tobias: Die Neurobiologie des Glücks, 2nd ed. Stuttgart 2014.
- Fatheuer, Thomas/ Fuhr, Lili/ Unmüßig, Barbara: Kritik der Grünen Ökonomie, München 2015.
- Fazey, Ioan et al.: Ten essentials for action-oriented and second order energy transitions, transformations and climate change research, Energy Research and Social Science 2018, pp. 54 et seq.

- Fisahn, Andreas: *Natur – Mensch – Recht. Elemente einer Theorie der Rechtsbefolgung*, Berlin 1999.
- Foucault, Michel: *History of Madness*. New York 2006.
- Frey, Bruno/ Frey Marti, Claudia: *Glück. Die Sicht der Ökonomie*, Zürich 2010.
- Friedman, Milton: *Capitalism and Freedom*, Chicago 1962.
- Fromm, Erich: *To Have or to Be*, London 1996.
- Fücks, Ralf: *Intelligent wachsen. Die grüne Revolution*, München 2013.
- Giddens, Anthony: *The Constitution of Society Outline of the Theory of Structuration*, Berkeley 1984.
- Glucksmann, André: *Hass. Die Rückkehr einer elementaren Gewalt*, München 2005.
- Gommer, Hendrik: *The Biological Foundations of Global Ethics and Law*, ARSP 2014, pp. 151 et seq.
- Gough, Ian: *Heat, Greed and Human Need. Climate Change, Capitalism and Sustainable Wellbeing*, Cheltenham 2017.
- Greve, Jens: *Reduktiver Individualismus. Zum Programm und zur Rechtfertigung einer sozialtheoretischen Grundposition*, Wiesbaden 2015.
- Gröpel, Peter/ Kehr, Hugo: *Motivation and Self-Control. Implicit Motives Moderate the Exertion of Self-Control in Motive-Related Tasks*, *Journal of Personality* 2014, pp. 317 et seq.
- Habermas, Jürgen: *Theorie des kommunikativen Handelns*, 2 vol., Frankfurt a.M. 1981.
- Harari, Yuval: *Eine kurze Geschichte der Menschheit*, München 2013.
- Harari, Yuval: *Homo Deus. Eine Geschichte von Morgen*, München 2017.
- von Harbou, Frederik: *Empathie als Element einer rekonstruktiven Theorie der Menschenrechte*, Baden-Baden 2014.
- Hardin, Garrett: *The Tragedy of the Commons*, *Science* 1968, pp. 1243 et seq.
- Hasler, Felix: *Neuromythologie. Eine Streitschrift gegen die Deutungsmacht der Hirnforschung*, München 2012.
- Heath, Chip/ Heath, Dan: *Switch*, Frankfurt a.M. 2013.
- Hermwille, Lukas/ Obergassel, Wolfgang/ Ott, Herrmann/ Beuermann, Christine: *UNFCCC before and after Paris – what's necessary for an effective climate regime?*, *Climate Policy* 2015, pp. 1 et seq.
- Heyen, Dirk Arne/ Fischer, Corinna et al.: *Mehr als nur weniger. Suffizienz – Notwendigkeit und Optionen politischer Gestaltung*, Freiburg 2013, <http://www.oeko.de/oekodoc/1837/2013-506-de.pdf>.
- Hosang, Maik/ Fraenzle, Stefan/ Markert, Bernd: *Die emotionale Matrix. Grundlagen für gesellschaftlichen Wandel und nachhaltige Innovation*, München 2005.
- Hume, David: *An Enquiry concerning the Principles of Morals*, Neuausgabe Oxford 2007.
- Irrgang, Bernhard: *Lehrbuch der evolutionären Erkenntnistheorie. Thesen, Konzeptionen und Kritik*, 2. Aufl. München 2001.
- Jackson, Tim: *Prosperity without Growth*, London 2009.
- Jakob, Michael/ Edenhofer, Ottmar: *Growth, Degrowth, and the Commons*, *Oxford Review of Economic Policy* 2014, 447 et seq.
- Janis, Irving: *Victims of Groupthink*, Boston 1972.
- Jellinek, Georg: *Die Erklärung der Menschen- und Bürgerrechte. Ein Beitrag zur modernen Verfassungsgeschichte*, Nachdruck Aalen 1996.
- Jensen, Annette/ Scheub, Ute: *Glücksökonomie*, München 2015.
- Juerges, Nataly/ Newig, Jens: *What role for frames in scalar conflicts?*, *Land Use Policy* 2015, pp. 426 et seq.
- Kahneman, Daniel: *Thinking – fast and slow*, New York 2011.
- Kim, Rakhyun/ Bosselmann, Klaus: *Operationalizing Sustainable Development: Ecological Integrity as a Grundnorm of International Law*, *Review of European, Comparative and International Environmental Law* 2015, pp. 194 et seq.
- Klaniecki, Kathleen/ Leventon, Julia/ Abson, David: *Human–nature connectedness as a ‘treatment’ for pro-environmental behavior: making the case for spatial considerations*, *Sustainability Science* 2018, pp. 1375 et seq.
- Klein, Naomi: *This Changes Everything. Capitalism versus The Climate*, New York 2014.

- Klingholz, Reiner: *Sklaven des Wachstums. Die Geschichte einer Befreiung*, Frankfurt a.M. 2014.
- Klinsky, Sonja/ Mehling, Michael/ Tuerk, Andreas: *Beyond Déjà Vu. Opportunities for Policy Learning from Emissions Trading in Developed Countries*, *Carbon & Climate Law Review* 2012, pp. 291 et seq.
- Kloeckner, Christian: *Towards a Psychology of Climate Change*, in: Leal, Walter (Ed.): *The Economic, Social, and Political Aspects of Climate Change*, Berlin 2010, pp. 153 et seq.
- Klöhn, Lars: *Kapitalmarkt, Spekulation und Behavioral Finance*, Berlin 2006.
- Kristof, Kora: *Models of Change. Einführung und Verbreitung sozialer Innovationen und gesellschaftlicher Veränderungen in transdisziplinärer Perspektive*, Zürich 2010.
- Kuckartz, Udo: *Mixed Methods*, Wiesbaden 2014.
- Kuckartz, Udo: *Nicht hier, nicht jetzt, nicht ich. Über die symbolische Bearbeitung eines ernsten Problems*, in: Welzer, Harald/ Soeffner, Hans-Georg/ Giesecke, Dana (Ed.): *Klimakulturen. Soziale Wirklichkeiten im Klimawandel*, Frankfurt a.M. 2010, pp. 144 et seq.
- Kühl, Stefan: *Ganz normale Organisationen. Zur Soziologie des Holocaust*, Berlin 2014.
- Lang, Daniel/ Rode, Horst/ von Wehrden, Henrik: *Methoden und Methodologie in den Nachhaltigkeitswissenschaften*, in: Heinrichs, Harald/ Michelsen, Gerd (Ed.): *Nachhaltigkeitswissenschaften*, Heidelberg 2014, pp. 115 et seq.
- Latour, Bruno: *Reassembling the social: An introduction to actor-network-theory*, Oxford 2005.
- Liebe, Ulf: *Different Routes to Explain Pro-Environmental Behaviour*, *Analyse & Kritik* 2010, pp. 137 et seq.
- Liebe, Ulf/ Preisendörfer, Peter: *Für oder wider die Natur? Verhaltens- und Orientierungsmuster der Bevölkerung im Umgang mit der Natur*, *Zeitschrift für Umweltpolitik und Umweltrecht* 2013, pp. 239 et seq.
- Liedtke, Max: *Der Mensch zwischen Gefühl und Verstand – Grenzen und Chancen des rationalen (und nachhaltigen) Verhaltens*, in: Korczak, Dieter (Ed.): *Die emotionale Seite der Nachhaltigkeit*, Kröning 2011, pp. 37 et seq.
- Linz, Manfred: *Weder Mangel noch Übermaß. Warum Suffizienz unentbehrlich ist*, München 2012.
- Luhmann, Niklas: *Das Recht der Gesellschaft*, Frankfurt a.M. 1993.
- MacCulloch, Diarmaid: *Reformation – Europe's House Divided 1490–1700*, London 2004.
- MacKay, David/ Cramton, Peter/ Ockenfels, Axel/ Stoft, Steve: *Price Carbon – I will if you will*, *Nature* 2015, pp. 315 et seq.
- Mazar, Nina/ Zhong, Chen-Bo: *Do Green Products Make Us Better People?*, *Psychological Science* 2010, pp. 494 et seq.
- Mead, George H.: *Mind, Self and Society. From the standpoint of a social behaviorist*, Chicago 1934.
- Messner, Dirk: *A social contract for low carbon and sustainable development. Reflections on non-linear dynamics of social realignments and technological innovations in transformation processes*, *Technological Forecasting & Social Change* 2015, pp. 260 et seq.
- Milgram, Stanley: *Obedience to Authority. An Experimental View*, New York 1974.
- Milinski, Manfred/ Marotzke, Jochem: *Das Klimaspiel. Warum scheitern Klimaverhandlungen?*, in: Marotzke, Jochem/ Stratmann, Martin (Ed.): *Die Zukunft des Klimas. Neue Erkenntnisse, neue Herausforderungen*, München 2015, pp. 93 et seq.
- Moreno, Camila/ Speich Chassé, Daniel/ Fuhr, Lili: *Carbon Metrics. Global Abstractions and Ecological Epistemicide*, Berlin 2015, https://www.boell.de/sites/default/files/2015-11-09_carbon_metrics.pdf.
- Muñoz-Rubio, Julio: *Sociobiology and human nature*, *Interdisciplinary Science Reviews* 2002, pp. 131 et seq.
- Muraca, Barbara: *Gut leben. Eine Gesellschaft jenseits des Wachstums*, Bonn 2015.
- Nagel, Thomas: *Mind and Cosmos: why the materialist neo-Darwinian conception of nature is almost certainly false*, New York 2012.
- Neitzel, Sönke/ Welzer, Harald: *Soldaten. Protokolle vom Töten und Sterben*, Frankfurt a.M. 2011.
- Newig, Jens et al.: *Exploring Governance Learning*, *Environmental Science and Policy* 2015, pp. 353 et seq.

- Nowak, Martin/ Highfield, Roger: *Kooperative Intelligenz. Das Erfolgsgeheimnis der Evolution*, München 2013.
- OECD: *How's Life? Measuring Wellbeing*, Paris 2015.
- Ostrom, Eleanor: *Governing the commons. The Evolution of Institutions for Collective Action*, Cambridge 1990.
- Paech, Niko: *Liberation From Excess*, München 2012.
- Piaget, Jean: *Die Psychologie des Kindes*, Olten 1972.
- Radermacher, Franz Josef/ Beyers, Bert: *Welt mit Zukunft. Die ökosoziale Perspektive*, 2nd ed. Hamburg 2011.
- Rodrik, Dani: *The Globalization Paradox: Democracy and the Future of the World Economy*, Harvard 2012.
- Rosa, Hartmut et al.: *Weil Kapitalismus sich ändern muss*, Wiesbaden 2014.
- Russell-Smith, Jeremy/ Costanza, Robert et al.: *Moving beyond evidence-free environmental policy*, *Frontiers in Ecology and Environment* 2015, pp. 441 et seq.
- Santarius, Tilman: *Der Rebound-Effekt. Ökonomische, psychische und soziale Herausforderungen für die Entkopplung von Wirtschaftswachstum und Energieverbrauch*, Marburg 2015.
- Scheidler, Fabian: *Das Ende der Megamaschine. Geschichte einer scheiternden Zivilisation*, Wien 2015.
- Schellnhuber, Hans Joachim: *Selbstverbrennung. Die fatale Dreiecksbeziehung zwischen Klima, Mensch und Kohlenstoff*, München 2015.
- Schneidewind, Uwe/ Zahrt, Angelika: *Damit gutes Leben einfacher wird. Perspektive einer Suffizienzpolitik*, München 2013.
- Scholz, Roland: *Environmental Literacy in Science and Society. From Knowledge to Decisions*, Cambridge 2011.
- Schulz, Christian/ Bailey, Ian: *The Green Economy and Post-Growth Regimes – Opportunities and Challenges for Economic Geography*, *Geografiska Annaler* 2014, pp. 277 et seq.
- Selten, Reinhard: *Mit Experimenten geht es besser. Über eingeschränkte Rationalität, Wirtschaftskrise und interdisziplinäres Arbeiten*, *ZiF-Mitteilungen* 1/ 2011, 24 et seq.
- Sennett, Richard: *Der flexible Mensch. Die Kultur des neuen Kapitalismus*, Berlin 2006.
- Siemer, Stefan: *Nachhaltigkeit unterscheiden. Eine systemtheoretische Gegenposition zur liberalen Fundierung der Nachhaltigkeit*, in: Ekardt, Felix (Ed.): *Generationengerechtigkeit und Zukunftsfähigkeit. Philosophische, juristische, ökonomische, politische und theologische Neuansätze in der Umwelt-, Sozial- und Wirtschaftspolitik*, 2006, pp. 129 et seq.
- Snyder, Timothy: *Bloodlands. Europe between Hitler and Stalin*, New York 2010.
- Steinberg, Rudolf: *Die Repräsentation des Volkes. Menschenbild und demokratisches Regierungssystem*, Baden-Baden 2013.
- Stengel, Oliver: *Suffizienz. Die Konsumgesellschaft in der ökologischen Krise*, München 2011.
- Stiglitz, Joseph/ Sen, Amartya/ Fitoussi, Jean-Paul: *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Paris 2009.
- Stoll-Kleemann, Susanne/ O'Riordan, Tim/ Jaeger, Carlo: *The psychology of denial concerning climate mitigation measures: evidence from Swiss focus groups*, *Global Environmental Change* 2001, pp. 117 et seq.
- Tapia-Fonlle, César/ Corral-Verdugo, Victor/ Fraijo-Sing, Blanca/ Fernanda Durón-Ramos, Maria: *Assessing Sustainable Behavior and its Correlates: A Measure of Pro-Ecological, Frugal, Altruistic and Equitable Actions*, *Sustainability* 2013, pp. 711 et seq.
- Thornhill, Randy/ Palmer, Craig: *A natural history of rape*, Cambridge 2000.
- Tomasello, Michael: *A Natural History of Human Thinking*, Harvard 2017.
- Weber, Max: *Protestantische Ethik und der Geist des Kapitalismus*, München 2010.
- Welzel, Christian: *Fluchtpunkt Humanentwicklung. Über die Grundlagen der Demokratie und die Ursachen ihrer Ausbreitung*, Wiesbaden 2002.
- Welzer, Harald: *Klimakriege. Wofür im 21. Jahrhundert getötet wird*, Frankfurt a.M. 2008.
- Welzer, Harald: *Selbst denken. Eine Anleitung zum Widerstand*, Frankfurt a.M. 2013.
- Wilson, Edward: *The Meaning of Human Existence*, New York 2014.
- Wilson, Edward: *The Social Conquest of Earth*, New York 2012.
- Wuppertal Institut: *Zukunftsfähiges Deutschland in einer globalisierten Welt*, Frankfurt a.M. 2008.



Ethics and Law of Sustainability – Especially of Freedom, Human Rights, Democracy, and Balancing in a Reinterpreted Perspective

Abstract

Non-sustainable societies can therefore be explained descriptively, but can sustainability be justified as a normative goal? The factual influence of values on our behaviour is limited. But when we ask what is normatively right, talking about values is the crucial level. Sustainability, in the sense of intertemporally and globally tenable ways of life and production, is a normative requirement. In order to justify this ethically and legally, a new foundation of universal justice is necessary. Common ethical approaches, which are intended to show the possibility of objective normative statements, prove to be not very convincing on closer inspection. The present theory of universal justice explores the limits of normative rationality and demonstrates that there is considerable scope for balancing without rendering normative questions purely subjective. Furthermore, the area of good living proves to be rationally intangible.

The variant of universal justice developed here as the basis of ethics and law and thus also the concretisation of sustainability is a heterodox discourse ethics. It is designed as the basis of a revised ethical and right-interpretive conception of liberal democracy with human rights and separation of powers at the national, European and international level. In particular, the argument that there is no alternative and an elenctic argument justify (a) the possibility of reason in questions of about what is supposed to be and (b) human dignity, i.e. the respect for the autonomy of the individual, and impartiality as (the only) universal principles of justice that logically cannot be denied without self-contradiction. This proves right not only in discourse, but also in practice and also vis-à-vis merely hypothetical discourse partners, i.e. vis-à-vis all human beings. These principles provide the basis for a comprehensive universal right to liberty, which is not limited to certain areas of life, to a democracy with separation of powers, and to a duty to guarantee all this legally.

This entire approach, centred around the liberal-democratic basic principles of reason, dignity, impartiality and freedom (and democracy with separation of powers), which in their (still unclear) connection appear for the first time with Kant, can be read as crucial modification of classical discourse ethics. In con-

trast, contextualistic, metaphysical and skeptic (including empiricist, e.g. utilitarian and cost-benefit-analytical) approaches which compete with a liberal-democratic universalism of discourse-ethical character prove to be unconvincing. This also applies to other versions of liberal-democratic theory such as those of Rawls or Sen. In order to determine concrete sustainability contents, an interpretation of the concept of sustainability itself or of topoi such as a legal “state objective for environmental protection” is not very promising, because it remains too vague. Rather, a new ethical and legal interpretation of human rights in the sense of overcoming a primarily economy-oriented understanding of freedom makes sense. This provides an ethically and legally stable basis for sustainability while at the same time overcoming the incompleteness of liberal-democratic philosophies. All statements on justice are statements on the social level. Ethical obligations of the individual that go beyond the obligation to bring about a just – including sustainable – social order are difficult to imagine *inter alia* due to a lack of concreteness under the auspices of sustainability problems as quantity problems. This is one of the reasons why human rights are always conveyed through public authority, even if their origin lies in the relationship between individuals.

In general, human rights prove to be rights to freedom and to the elementary preconditions of freedom. A distinction of negative and positive freedom does not work. The ethical and legal interpretation that human rights only protect selected, supposedly particularly valuable freedom activities, is equally unconvincing. The *humandignity principle* (understood as the required respect for the autonomy of the individual, i.e. the principle of self-determination) and the *impartiality principle* (understood as the required independence from specific perspectives) are not fundamental rights, nor are they intended to say anything at all about a concrete ethical or legal individual case. Rather, they are the basis for justifying and interpreting freedom and thus also for a sustainability-oriented reinterpretation of freedom, of the rules of balancing, and of democratic institutions. All this and more applies to liberal-democratic nation states, to the EU and also to international institutions and organisations – also based on a further developed figure of general principles of international law.

Ethically and legally (also on a transnational level), as normative essence of sustainability, there is a right to the elementary preconditions of freedom. This means conditions such as life, health, subsistence level in the form of food, water, security, climate stability, elementary education, absence of war and civil war, etc. The protection of other freedom-promoting conditions, on the other hand, has no ethical or legal human-rights status, but nevertheless deserves recognition, albeit not the duty of the public authorities to act. This is where sustainability concerns are located if they are not elementary to freedom. – The possible alternative to the existing concept of freedom, which would be an ethics of capabilities or need, is rejected due to a number of logical and legal issues, problems of application, and illiberal tendencies.

The freedom outlined in this way, including its elementary preconditions, deserves legal and ethical protection also intertemporally and globally, and thus leads to a human-rights-based theory of sustainability. In particular, arguments for this intertemporal and global extension can be formulated under aspects of

potentiality and freedom protection where freedom is endangered. Counterarguments against an intertemporal-global protection of fundamental rights such as the future-individual paradox or the reference to unknown preferences of future generations are ultimately not convincing. The precautionary principle can be classified as a sub-aspect of human rights; it reflects their protection even in uncertain, long-term and multi-causal risk situations. Furthermore, freedom also contains protection by the state, not only defense against the state. These insights are not rendered irrelevant by certain widespread objections to such a multipolar understanding of freedom (e.g. in relation to democracy and the separation of powers). The classical distinctions of action and omission and also deontology versus consequentialism thus latently lose their object. Only in view of all of these steps it is possible to interpret human rights in a manner which includes the protection against climate change, dwindling resources, etc. and thus concrete normative sustainability criteria become conceivable.

Environmental-ethical pathocentrism or eco-centrism can make no additional contribution to the normative theory of sustainability issues, since these approaches prove to be untenable at closer inspection. Nevertheless, environmental protection has a comprehensive ethical and legal justification. In general, freedom is limited only by freedom and the preconditions of freedom of other people, not by any form of common good or the like, which should rather be rejected as a concept. Questions of the good life elude regulation, which is why the ethical and legal justification of sustainability measures does not refer to the subsequent possibly greater happiness of those whose freedom is restricted. Discourses on frugality and nudging, for example, are often based on false assumptions in this respect. Main issues of the welfare state can be identified as sustainability phenomena, taking the threat of climate change into account, although the possibility of objectively answering distributional questions is often overestimated.

Ethical and legal decisions can only be understood as a balancing situation (between various freedoms, elementary preconditions of freedom, further freedom promoting conditions and everything that can be derived from all of the above). Any sustainability decision is thus marked by normative and factual uncertainties (which is usually overlooked). Concrete problems such as “strong versus weak sustainability” or the relevance of a specific argument can only be meaningfully resolved within this theoretical framework.

The ethical and legal theory of sustainability is also developed as a transformed theory of democracy and of balance of powers. The main victims of today’s unsustainability are not voters of today’s parliaments and governments, but future generations and people in other countries. Sustainability is thus in conflict with democracy, to which it – on the other hand – has an affinity because of the necessity of discourses and learning processes (which also rules out any kind of ecodictatorship).

Institutional innovations compared to the existence of democracies based on separation of powers are only indicated to a limited extent in the context of sustainability. The most important point is to establish liberal-democratic institutions on an international level in addition to the national sphere. The right balancing rules, which are the very basis for normative sustainability statements, can be obtained

through a legal and ethical balancing theory, which goes beyond traditional legal and ethical approaches and sociological risk theory. These balancing rules outline the scope normatively rational statements which are possible to make e.g. on sustainability and which are based on liberal-democratic principles. Rules of procedure and fact-finding rules can also be derived, as can a new human-rights understanding of the precautionary principle in law and ethics. There are also rules for taking new findings in valuations and facts into account. In the interplay of the powers (nationally and transnationally), the violation of balancing rules leads to an obligation to make a new decision in compliance with the previously violated rule – and thus ultimately to an obligation to (significantly) more sustainability. Violated rules in terms of sustainability concern e.g. the factual basis of climate policy to date and the polluter pays principle. The most important rule for the context of sustainability is the prohibition to ruin the basis of balancing as such by depriving its physical foundations. In spite of all remaining leeway, this already carries a human rights obligation similar to the extent of the temperature limit in Article 2 para. 1 PA. A partly similar statement can be made for other resource and sink challenges, but not for all of them. If using further balancing rules such as the polluter pays principle and economic capacity, it is also possible to give some indications as to how the efforts and costs of mitigation and adaptation should be distributed globally.

All this is also meant as an alternative to the economic cost-benefit analysis, which ultimately represents an empiricist ethics in disguise. It is not only based on a (hidden) untenable normative basic theory and has unsolvable application problems. It also finds itself in insoluble conflicts with a liberal-democratic legal system that does not allocate rights according to solvency and does not primarily organise votes as plebiscitary snapshots.

Keywords

Sustainability ethics · Sustainability law · Freedom · Human rights · Democracy · Balancing · Normativity · Universalism · Postmodernism · Cost-benefit analysis · Sustainable freedom · (Human) dignity · Preconditions of freedom · Capabilities · Individual ethics · Business ethics · Intertemporal justice · Justice · Global justice · Multipolarity of freedom · Good life · Distributive justice · Ecocentric ethics · Sustainable institutions · Democratic system · Inevitability of balancing · Eco-dictatorship · Decision-making · Economic freedom · Uncertainty · Risk · Non-egalitarianism · Discretion · Political majorities · Climate economics

3.1 Why Normative Questions Can Be Rationally Decided – Toward a New Universalism Beyond Philosophical Classics, Postmodernism and Cost-Benefit Analysis

The lack of sustainability in essential respects of previous lifestyles and economic practices, as well as the insufficient political and legal reaction to them (Chap. 1.2 and Chap. 4) can be explained descriptively in accordance with what has been said

(Chap. 2). However, this in itself does not contain anything normative statement, nor does the natural scientific and economic statement that there is climate change and scarcity of resources. This would be a fallacy of is and ought (Chap. 1.6). However, with the climate and resource problems, the central principle of liberal-democratic societies is also endangered: freedom. Without breathable air, edible food, drinkable water and a stable global climate – and without the absence of war and civil war (including wars over the distribution of scarce resources such as food), the freedom of development, opinion, assembly, property, etc. guaranteed by the liberal democratic constitutions is of little use. On the other hand, the threat to livelihoods could provoke an ecodictatorial removal of freedom in the event of increasing catastrophes, because fundamental changes in democracy are rarely radical or quickly enforceable.

But before substantiating a sustainability ethics and along with a re-interpretation of the law including a temporally and spatially extended concept of freedom and human rights, it must first be shown that a liberal (freedom-centered) doctrine of justice should form the basis of coexistence. This is necessary to prove that any threat against the elementary livelihoods, conditions of freedom, or the liberal-democratic order would be an evil to be avoided. Chapter 3 is therefore devoted to the ethics of sustainability and the constitution of sustainability, especially human rights – beginning with a fundamental reinterpretation of its core concept: freedom. Chapter 3 also deals with democracy, with the institutions of sustainability, with the necessary balancing and how to deal with uncertainty. This is preceded, however, by the question: Can normative questions be decided rationally? Here, as with the concept of freedom and balancing, fundamentally new paths will have to be taken in laying the foundations for normativity that are relevant far beyond the discourse on sustainability.

Can Normative Questions Be Decided Rationally?

As mentioned earlier (Chap. 1.7), questions of fundamental sustainability goals are both ethical and legal questions about how the essential provisions of liberal democracies at national and transnational level are to be interpreted. This is preceded, however, by the question of whether normative questions can be decided with reasons at all. Can we really talk in an objective and rational way about sustainability goals? Those who do not wish to follow this debate can limit themselves to the debate about material sustainability ethics and sustainability constitutional law (in nation state law, European law and international law) and continue in Chap. 3.2. However, question about the extent to which sustainability goals can be rational will clearly deepen the understanding of the later findings in terms of content, as will be seen. After all, you can say much more about goals and standards and how they have to be balanced than sustainability research usually assumes.

If, however, we succeed in justifying the liberal-democratic human rights order as such, instead of simply taking it for granted, this would strengthen the argumentation by justifying its basic principles. And it would offer a clearer

understanding of the nature of sustainability goals. At the same time, it would establish a parallelism of law and ethics by identifying a certain ethics centred on liberal democracy and human rights guarantees as correct. It would thus avoid the huge conflicts of an ethics that is contradictory to law (Chap. 1.7). This is also made possible by the fact that constitutions tend to regulate the fundamental questions of normativity by establishing a few general principles rather than their detailed form, as will be seen. The idea of formulating a supposedly “mere” minimal ethics is less successful (some people intuitively tend to it, because of the difficult questions of justifying objective norms in the pluralistic age). For even this minimal ethics would have to be justified (and what is “minimal” in terms of content anyhow?), and this too can come into conflict with the law. If, on the other hand, minimal ethics simply duplicated the law “without justification”, it would not bring any added value.

The whole circle of questions is not trivial (although, for example, Popper 1945 simply presupposes open society as justified). Nevertheless, for a long time there has been a zeitgeist that paradoxically acknowledges universal human rights but at the same time is resolutely relativistically oriented. Often, the scope for consideration (see Chap. 3.6) is also confused with relativism. But ultimately, we have to ask: can we criticise authoritarian or totalitarian regimes and their legal systems that may have their origins in a “certain culture” or may even have a majority of the population behind them (i.e. China, Russia)? Is it also possible to criticise non-sustainable behaviour in terms of sustainability as ethically wrong? Is not liberal democracy itself challenged from within (Ekardt 2017; Bussemer 2011), in that its cultural relativists and postmodernists deny not only universality, but justifiability at all? If it is to be shown in the following that, despite all the uncertainties and scope for balancing in individual cases, there is still something like objectivity (Chap. 1.6) in normative questions, this will sound unfamiliar to some at a time when some people reject any normative statement with the remark that one should please “not patronise anyone” and “not be so moral”. This rejection will fail on closer inspection, as it makes the freedom of the inhabitants of Western countries absolutely nonchalant towards the victims (people in countries affected by climate change and future generations, for example) and declares normative questions an unobjectifiable matter of opinion. *Objective norms will prove to be possible – even if there remains room for balancing between different norms or principles (which, however, can be limited despite all the vastness) – and questions of a good life do not permit an objective answer, as we will see.*

It may be confusing for many – besides overcoming a primarily individual and corporate ethical perspective (see Chap. 3.2) – that, as previously mentioned, descriptive anthropology and normative theory of justice are clearly separated in this book. The “nature of humans” is not a separate subject of the theory of justice, not even in the context of much-discussed human dignity (on dignity see Chap. 3.2). The ethics or theory of justice to be developed here will therefore not follow the widespread empiricism (or naturalism), which tries to reduce normative questions to empirical questions (Albert 1993). Empiricism as an approach has already been criticised above for its experimental methodology of behavioural research (Chap. 1.7); now the critical focus is on empiricist contributions to normative basic theory.

In the examination of economic approaches, further arguments against such contributions will be developed in the following, beyond the distinction between is and ought. With this distinction, the discourse known in philosophical circles under the heading “externalists versus internalists” can also be avoided. This discourse is about whether people follow normative principles because of the principles themselves or for other motives – but this debate is about empirical problems of implementing norms, without direct relevance for normative theory. The distinction between is and ought also answers a question common among philosophers of whether “moral facts” are sought with a normative theory. This is not the case. Rather, it is completely unclear what moral facts would mean, if facts are empirically graspable as already demonstrated (in Chap. 1.6; briefly to these discourses Ekardt 2016a).

Four Different Ethical Approaches, Misunderstandings About Deontology and Consequences – And About “Liberalism”

The question in Chap. 3.1 is: Are there objectively founded standards, evaluations, or basic rules? And if this justification is not linked to restrictive conditions such as a certain civilisation, are there even universal standards? Furthermore, if that were the case, which core principles can then be derived? In the philosophy of justice, at least since the early modern era, four basic approaches can be distinguished, each of which, however, indicates a considerable spectrum within which there are manifold and often very bitter opposites. Here we call these four – slightly stylised – basic approaches (a) contextualistic, (b) metaphysical, (c) liberal and (d) sceptical (similarly differentiating Alexy 1995). The approaches find justice with reference to (a) origin and actual cultural context/ intuitions/ common sense (also human rights would then only be valid as a cultural tradition); (b) on otherworldly bodies such as God or eternal ideas; (c) on normative reason; (d) in denying any justifiability of norm, simply “not at all” or in a way that completely (!) reduces the normative question of justice in some way to empirical realities, such as factual consumer preferences, power, or majorities. There are different forms of the sceptical view. First, it is called positivist which is when it considers normative principles possible and merely denies their justifiability, i.e. simply takes any citizen and consumer preferences or majority decisions for granted. Second, it is called postmodern if it considers not only norms but facts as a subjective construction yet not rationally founded. Third, sceptic view is called nihilistic if any kind of norm (and not only as with the positivists and postmodernists their justifiability) is rejected. Specific variants of positivism are economic-efficiency theories such as cost-benefit analysis (Hansjürgens and Lienhoop 2015; Brent 2017; Nordhaus 2008; Pearce et al. 2006; Hanley and Barbier 2009; Hausman 2012) as well as the tradition of Hobbesian empiricism in general, including utilitarian approaches based on it (such as Bentham 1996; Birnbacher 1988; Lumer 2000; Singer 2009; Harsanyi 1978; Smart 1978).

All these approaches very often occur in difficult combinations, for example in Marxism, where elements of all four schools of thought are represented. By the same token, in the talk of an “eternal natural law”, for example, a liberal and a metaphysical approach are often combined. In various Anglo-Saxon approaches calling themselves “liberal” (or sometimes also “egalitarian”), which strongly influence the climate debate in particular, liberal elements are combined with positivist and possibly still contextualist elements, as in the case of John Rawls. In this version, which is very widespread in ethics today, liberalism is given an empiricist foundation. Liberalism in this context does not mean some form of neoliberalism in that freedom is above all freedom of property and any regulatory intervention should be avoided as much as possible (without clear-cut distinction Bailey 2007; DuPuis and Gareau 2008; Bedall 2014; as central spokesman Friedman 1962).

It must be emphatically noted that these concepts (in the sense of the separation of definition and content: Chap. 1.6) function merely as categories for structuring and defining further considerations. This means that the further argumentation in no way depends on whether one wants to differentiate philosophical approaches in a different way and whether it is at all true that typologically no “other” approaches exist than the four schools of thought mentioned. However, it is probably really true that various approaches of different individuals or groups of authors (Hans Jonas, Alan Gewirth, Michael Walzer, feminist theories, analytical philosophy, etc.) not mentioned here can be classified in the given systematics – respectively that they are subject to the same critical objections which will be raised against the basic approaches a, b and d in the following.

Liberalism therefore does not mean focusing on economic freedom, free competition and free trade, even if this economically oriented liberalism often coopts the term liberalism (rather, it is usually more of a variant of positivism, as we will see later). In this book, liberalism simply refers to the doctrine which considers the basic order to be just, which is well and possibly universally founded, i.e. corresponds to normative reason. This liberal (or Kantian) reason differs from other doctrines, which sometimes also call themselves reasonable, by their critical claim, i.e. by their reflexivity: existing traditions are critically distanced and questioned for justifying – hopefully universal – reasons (Nagel 1997; Habermas 1981). In this sense, Plato, for example, rather embodies a metaphysical approach, although he has essential rationalistic elements (albeit difficult to describe as “liberal” in the literal sense) in his thinking. For Plato’s thinking is based on specific experiences of evidence and forms of knowledge that are only available to a few chosen ones. With these explanations, instead of the distinction presented above we could also distinguish between Nietzschean (= sceptical), Kantian (= liberal-rationalist), Aristotelian (= contextualist and/ or metaphysical) and Hobbesian (= positivist) approaches and thus name the distinction based on some philosophical classics (Alexy 1995).

On the other hand, a separation of theories of justice that are oriented towards deontology and duties on the one hand and towards consequences on the other hand, would not appear to be helpful. Every ethics necessarily has some normative principles for orientation and at the same time is always faced with the question,

which rules should apply in case those principles collide, also with regard to the expected consequences (this question does not arise only occasionally, but rather constantly: Chap. 3.6). The attitude as such, without a sequence of actions, cannot be normatively relevant, because there is simply no justification for it – the fact that an attitude itself is irrelevant was already addressed in the “externalist versus internalist”. The main points of contention in this classic controversy also tend to focus on individual ethics, for example the alleged excessive responsibility – and the problem of who is responsible for what consequences in complex problems such as climate change. However, this is based on a misunderstanding about the scope for balancing different norms and the responsibilities of who must bring about justice (Chaps. 3.6 and 3.5). Nobody has to “save the climate” alone. Consequently, there is no room for platitudes such as that justice can only ever be partially realised or is even an unattainable ideal.

Flaws of Classical Liberalism: Rawls (and Kant) – And Flaws of Contextualism

Philosophical liberals are of the opinion that such an order is *universally* and exclusively true. Their argument is usually based on human dignity and the principle of impartiality. Dignity (equal respect) is used here as the necessary respect for the individual as an autonomous being; impartiality (in spiritual succession and clarification of Kant’s categorical imperative) shall be regarded as a principle of not asserting special interests. Freedom and democracy – as well as the separation of powers – should then be derived from these basic principles. For reasons of space, it is not discussed here which attempts Kant originally made (and which ultimately failed) to justify these derivations – from normative reason to dignity and impartiality and from those principles to freedom and democracy (see Ekardt 2016a). In our days, the same respect and impartiality are brought together in a memorable picture, the “veil of ignorance”, by the most famous Kantian of the twentieth century, John Rawls. In this hypothetical situation, called *original position*, equal decision makers face each other under the condition that they do not know who they are in real life (Rawls believes they would vote in favour of two norms: a right to freedom, without balancing, but with a very narrow understanding of freedom – and for a slightly blurred principle that every public decision has to benefit the weakest). This picture illustrates the two basic principles but does not explain their existence. Furthermore, it does not answer the follow-up question of the sceptic, who views justice as any arbitrary subjective or social construction (or of the contextualist, who simply assumes that the long-grown moral tradition of our culture, based on our *de facto* intuitions, is right; Lübbe 1998; Taylor 1992; MacIntyre 1988; Walzer 1977, 1983): *why* dignity and impartiality? This question is important because sceptical and contextualist positions are increasingly dominating the arts sector, politics, philosophy, political science, and jurisprudence – and they are characterised by the fact that they deem judgments and questions of justice either not decidable at all

(sceptics) or decidable only based on our respective non-universal “cultural values” or “factual everyday moral intuitions” (contextualists).

Rawls (1971, 1992) himself realised the lack of justification in his two liberal core principles of respect and impartiality. He therefore offers to those to whom these principles do not appear self-evident as “justification” a reflective equilibrium: This elicits, quasi empirically, our two main moral intuitions. As Rawls himself observes “the hypothetical nature of the original position invites the question: why should we take any interest in it, moral or otherwise? Recall the answer: the conditions embodied in the description of this situation are ones that we do in fact accept.” (Rawls 2003, p. 514). According to Rawls, respect and impartiality result from our de facto recognition of those basic principles. Unlike real contextualists, Rawls’ “minimum contextualism,” does not simply declare “all our everyday moral intuitions” just. The influence of intuition in his theory is limited to the two principles, which then are the basis for further deductions. Still this problem prohibits Rawls from offering a truly universalistic theory since the “two principles” are probably not factually recognised worldwide.

Moreover, Rawls fails on certain issues, which also contextualists or communitarians (or intuitionists) stumble upon (in detail for the following aspects Ekardt 2016a, 2019): (1) Why should certain “factual intuitions,” i.e., norms that are de facto recognised, therefore be deemed right? (2) And whose intuitions are decisive: those of the majority, those of the general public, or those of a two-thirds majority? And if the majority: Why exactly the majority? (3) How can all this be applied without resulting in the is-and-ought problem (which arises where factual intuitions/judgments are used to determine their validity)? (4) And how can deriving judgments from “our factual everyday intuitions” ever give solutions for new normative problems such as the issues of intergenerational and global justice, which require breaking up old traditions? One last point: (5) How does a contextualist handle the problem, that his approach necessarily approves a deliberate totalitarian dictatorship of the majority? (Unless he first introduces a particular non-totalitarian moral ideal. Then again, we would have to ask why just this ideal should be binding – this can be expected to lead either into a dogmatic setting without justification or an infinite regress).

All these problems also occur if a contextualistic approach states: “Right, is exactly that basic order which complies with our moral sentiments.” At first, this sounds interesting. Why would you bother to rationally explain, e.g., that National Socialism was unjust, if we already have an “infallible feeling” that “a Nazi is a swine”? But this is simply *not* enough. Otherwise I would just as well be right if I happened to have an “infallible feeling” that “all Jews should be killed”. And what are you going to do if you encounter a skinhead who actually has just this sentiment? Relying only on feelings could not justify why the “nice” should somehow be right, and the “evil” be wrong. Therefore, by definition, no universal standards of justice could exist. Kant, unlike Rawls, searched for an answer to the question of justice, which would be free from empirical assumptions (and universally applicable) in order to avoid, inter alia, such critical, ultimately unsolvable objections: To Kant precisely that basic order is just which arises from the normative practical reason.

Unfortunately, he could not show convincingly why (a) dignity (respect) and impartiality are “necessarily” implied in normative reason, and why (b) reason is (even universally) inescapable.

Of course, one could deny that someone who makes a claim (such as Kant) bears the burden of argument for this position – theoretically, one could impose this burden of proof on the critic. The same applies to my own position described in the following.

Like contextualist positions, an attempt to find justice on a basis of religion fails. This is because a religious justice could only be helpful if the founding dogma of religious theories was right: Right respectively just is precisely what God commands. God’s existence, however, is neither provable nor refutable – and even if there were evidence, there would be no method of how to determine his will with certainty.

Flaws of Scepticism

A *sceptic* to a theory of justice could object: “How true! All attempts of founding a concept of just societies fail. Consequently, justice, and generally any judgment, is always irrational and therefore purely subjective.” This is an enhanced version of the ever more popular – conservative or left – position, which already the ancient Sophists used against Plato. In this sense, sceptics assume that it is unthinkable to justify norms of judgments. Sometimes this has a utilitarian or Hobbesian shape, where at least balancing of the de facto preferences of the citizens is considered rationally feasible. Notabene, this also addresses the standard approach in economics, which receives increasing attention in political debates. Therefore, these ideas require further analysis.

However, sceptical approaches already stumble upon a core problem, which is also an issue for contextualism (besides those frictions, which have already been presented). First: A contextualist’s basic idea that all normative statements depend on their cultural context is logically incongruent, since he *necessarily* uses that which he denies as a background assumption. Because *the statement itself*, that what is derived from a cultural context is per se right, cannot be meaningfully understood as context dependent in the sense of: “We factually think that whatever can be found factually is right.” For empirically this would be wrong since many residents of the West, and of the entire world, factually do *not* make their judgments based on a cultural context, but, e.g., on religion or liberal ideas. Anyone who states: “Everything is based on context”, therefore means more likely to say that at least this statement itself is *independent* of its context or any culture. In doing this, however, the contextualist applies what he considers impossible with respect to liberal ideas: He relies on a universal level, where people can gain insights, which are cross-culturally true. Ergo he relies on reason. Thus, reason, which *by no means* depends on the respective culture, is the ultimate and universal instance, which is the starting point for discussions about justice (*not* the social context). The sceptic is caught in the same dilemma: If his statement that everything is contingent, purely subjective, and depends on the respective observer should be correct, this also

applies to the statement itself. For, if any norm is only an unjustifiable, not further rationalised “subjective construction,” obviously scepticism itself is only such a subjective construction of the world. Then, however, it cannot rule out objectivity/universality. On the other hand, if the sceptical thesis wants to claim its general validity, it contradicts and thus cancels itself out – because then there are obviously not only “subjective opinions” but also universally correct statements. Then, however, the liberal conception, which considers issues of justice to be rationally decidable, is not proved invalid.

This is also true if the sceptic calls judgments unjustifiable but at the same time tries to justify the underlying judgment of this claim (e.g.: “Norms are unjustifiable *because* there are obviously different systems of norms around the world.”). In other words: The thesis “There are no justified judgments” is itself a statement on the basis of normative judgments (not a statement of fact). In addition, there is another self-contradiction: All persons who at least occasionally use reason in normative questions in everyday life contradicts themselves if denying the possibility of reason. And there may never have been a person who does not (at least) occasionally make normative statements and justify them. Hence, reason is a basis for determining issues of justice, which cannot be proved *nonexistent*. Even if we disregarded the point that a sceptical idea (see e.g. Rorty 1989; Kelsen 2000; Krisch 2010; Koskeniemi 2005) logically cancels itself out, it would still raise serious questions. For it renders us susceptible to authoritarian and totalitarian doctrines which post-modern thinkers (such as Foucault 2006 and Rorty 1989, but also Luhmann 1993 and Siemer 2006) reject, too. If ultimately everything is unjustifiable, why should we defend freedom against fundamentalist attacks – or against constantly growing restrictions of freedom in favour of “more security against terror”?

Why Empiricist (Hobbesian or Utilitarian) Skepticism Does Not Work Either

Empiricist preference theories, which are the common theories of justice among economists and partly among sociologists and political scientists, already fail due to this contradiction that proves normative reason inescapable. It is a mild version of a liberal-positivist scepticism subsequent to Hobbes. The basic thesis is that an order is just when it results solely from the (usually selfish) factual preferences of citizens and (optimally) has them translated into clear monetary units. In any case, it is important to note that these ideas are somehow built on a theory of action or anthropology based on self-interest (*homo oeconomicus*), but still may be considered strictly separate from such a theory. To put it bluntly, the difference can once again be shown with the following simple formula: “People are in fact purely self-interested” (= anthropology) – “and this is a good thing; and to yield to the purely factual preferences of the people is the best basic order of society” (= theory of justice, specifically the normative preference theory).

In any case, the preference or empiricist theory (including cost-benefit analysis: Chap. 3.9) is itself an ethics. Economists often deny or at least forget about that

(Hansjürgens and Lienhoop 2015; Brent 2017; Nordhaus 2008; Pearce et al. 2006; Hanley and Barbier 2009; Hausman 2012). But when it comes to “optimal” or “efficient” societies, this is just another word for what is right and just. For the empiricist, “right” is that which corresponds to the actual preferences of the people – which are summed up. And this basic approach is clearly a normative theory.

Any preference theorist per se does not consider the factual wishes of the people to be subject to any criticism. The utilitarian then uses the highest possible sum of the factual preferences of the citizens as a criterion of justice (“the greatest happiness for the greatest number”; Bentham 1996; Birnbacher 1988; Harsanyi 1978; see also Lumer 2000; Singer 2009). The cost-benefit analyst looks for the sum of the de facto preferences of people, counted in terms of money. The Hobbesian looks at the consensus of selfish people. And in political science majority theories, the relevant preference is what the majority of citizens factually decides, possibly by means of a specific procedure. However, it usually remains unclear how such a procedure is based on rational theory. All this primarily uses instrumental (empirical) rationality, while norms or judgments are declared irrational in their basic principles. After all, preference theorists – unlike other sceptics – recognise a rational balancing between those preferences (yet such balancing is not understood as a normative act but rather as a quantified clearing of divergent preferences). Moreover, unlike real sceptics, those theorists may consider the whole process as a kind of “justification”.

However, *all preference theorists* must fail due to several objections and questions that ultimately link to my criticism on contextualism and Rawls: (1) *Why* should de facto preferences be right per se? Was the Third Reich “right” due to its de facto approval of many citizens? Since even in this case it seems impossible to give an answer, preference theories end in infinite regress, or they rely on a dogmatic setting – and thus are unjustified. (2) And whose preferences are decisive: those of the majority, those of the general public, or of a two-thirds majority? And if the majority: Why exactly the majority? And is it the sum or the average of preferences? In any case, a mathematical calculation or quantification of all preferences is not reasonably possible, for instance because they very often do not have a market value. We will discuss this (ultimate) problem of application of empiricist approaches when we evaluate cost-benefit analysis (in Chap. 3.9). (3) A preference theory is not only powerless regarding dictatorship, but also when faced with new challenges (e.g., in terms of intergenerational and global justice) and new guidelines are seemingly too uncomfortable, unfamiliar, or too expensive. (4) Furthermore, an inference from preferences to their normative validity encounters the problem of is and ought. (5) But most of all, the thesis underlying the orientation toward empirical preferences (or “needs”) that there is no normative rationality or no justified goals, cancels itself out by means of a performative self-contradiction, as was demonstrated with respect to sceptical theories.

Despite all these faults, I share the basic intention of many empiricists that every person has a right to their own, autonomous pursuit of happiness, which no religion, no cultural tradition, no authority, etc., may bar. In other words, this means: every citizen has to decide about their *good life* and society is only concerned with issues of *justice* – this thesis, however, can be justified otherwise without the demonstrated

faults (namely through freedom rights, which will be justified in the following by logically relating them back to our previous findings). Thus, normative reason as the basis of justice cannot be proved impossible. Incidentally, this shows that the alleged antitheses “economic efficiency versus justice” or “efficiency versus ethics” which economists and their leftist critics like to use make very little sense.

Classical Discourse Ethics as Improved Liberalism – And Its Flaws

But what is the alternative to empiricist theories? The most stimulating recent attempt to justify freedom and democracy (perhaps universally) comes from discourse ethics. Jürgen Habermas, Karl-Otto Apel, Robert Alexy and others no longer understand normative reason like Kant as something of substantive nature, but simply as the capacity to decide normative questions based on reasons (Habermas 1983, 1992; Apel 1976; Kuhlmann 2001; Alexy 1995). Habermas, for instance, then formulates the principle of impartiality, i.e., the principle that the social order must be generally acceptable regardless of special interests, as an essential principle of justice. But unlike Kant, he does not only postulate it. Rather, he finds it on the inevitability of reason which was just shown and on the following considerations: judgments and knowledge in general are always tied to the medium of language and thus to “the understanding” among humans. Since such an understanding could only be achieved through reasoning, we would always have to look for a consensus in discussions about justice. And this is precisely the principle of impartiality: namely, that exactly that norm, and that order, is right, which all possibly interested parties could agree to without duress. In addition, everyone had to respect its dialogue partners as equals. Unlike Kant, however, Habermas seems to understand the idea of mutual respect *particularly for the autonomous individual* (which is the foundation of freedom and democracy) as being tied to the respective cultural context. In his view, it is a mere “formal property of modern law” and thus somewhat more occidental than universal.

This classical discourse ethics, however, is again subject to important desiderata. *First*, it encounters the same difficulties we have already seen in our discussion about Rawls with respect to the dependence of some aspects (“formal properties”) on their cultural context. *Second*, most discourse ethicists use additional vague background assumptions (that every allegation a person makes contains an implicit claim of validity; that the need to look for consensus is a feature of language; that “discourse obligation” and a duty to rationality exist), which I will dispute in the following. *Third*, particularly Habermas and Alexy (in more detail below) do not sufficiently clarify a very important point: that not only rules for our *discussions* about justice but also for *actions* in justice may be derived *directly* from normative reason, and that there are obligatory reasons for this assumption. *Fourth*, the classical discourse ethics has so far only provided some elements but not a comprehensive theory of justice. For instance, there is no theory of freedom based on discourse ethics (certainly not one that is *universal* in all societies, *intertemporal*

between times, and *global* between societies) – and therefore, previous discourse ethics may lack the core of all justice. Furthermore, there is no clarification whether human reason makes the *autonomous individual* the relevant standard, which is essential in the dispute about universalism. *Fifth*, the classical discourse ethics (see below for details) has not yet recognised that a final concept of a just basic order can rationally be deducted. Such a concept is not only comprehensive but also does not allow any additional principle, as we will see later (Chaps. 3.4 and 3.5).

Towards a Renewed Discourse Ethics and Kantianism – The Role of Negative Arguments

Since contextualist, empiristic, sceptical or religious approaches have proved dubious, a modernised variant of rational universalism (respectively a renewed discourse ethics) is to be developed, which is not subject to the objections discussed above. It will provide the basis for the concrete sustainability theory in the further course of the book. With these considerations, I attempt to make a new start in justification theory, in parts overcoming classics such as Kant, Rawls (1971) or Habermas (1981, 1983). It will be continuously oriented towards the liberal principles of human dignity, impartiality, freedom and democracy, including their normatively rational foundation, in particular through further developed elenctic or “negative” reasoning. Transcendental/ elenctic/ negative arguments have nothing to do with religious transcendence, but logically demonstrate that a certain statement, e.g. a certain norm, cannot be disputed without the disputant logically presuming the norm again. Thus, they generate normativity without dogmatic “setting” of certain starting points or axioms, whose necessity many economists, natural scientists and empiristic philosophers everywhere suspect and therefore reject the idea of universal rationalism and any objective normativity (on the structure of transcendental arguments see Illies 2003; Stern 2015; Nagel 1997 and Engle 2007 for short; Illies also shows that the argument offered below in favour of reason is a strict transcendental argument – and that the argument for respect and impartiality is rather an “implicative” transcendental argument whose logical structure is less easily represented).

The considerations here will lead to the theses: (a) Universal reasoned and thus just is a basic order based on dignity, impartiality and freedom, which institutionally derives from it balancing rules and a democracy with separation of powers. (b) Reason as the basis of justice is in turn incontrovertible (similar to Alexy 1995; Illies 2003; Kuhlmann 2001; partly also Nagel 1997; Habermas 1983; Herrler 2017; Forst 2002; critically Engländer 2002). The latter has just been proven, but there will be another argument to be put forward here and, moreover, the argumentation will need to be examined in more detail. All this does not mean that every negative argument is valid per se; sometimes those arguments are also used incorrectly. In particular, transcendental arguments on the theory of justice are only about its logical indisputability and not about an ontological proof of existence (see Stern 2015 and Stroud 1968, however with a partly incorrect presentation of what

transcendental arguments achieve: namely to argue precisely without a “starting point”, or only with one that a sceptic necessarily admits).

Why Freedom and Democracy Are Objective/Rational

Let us start with the argument of “lack of alternatives” for both (b) reason and (a) the liberal principles of dignity (= respect for the individual autonomy, see below) and impartiality. As we have seen, the deduction of principles of justice from a religion, a certain cultural-relative tradition or even from selfish preferences is not convincing as a result. This not only means that the non-liberal theories of justice are untenable. It also means that there seems to be no alternative but to think and talk about what is just. The way to seek justice with the help of normative reason is therefore without alternatives. But if the basic order can be reasonable and even has to be (as will be confirmed below): Which principles of the basic order then deserve that we mark them as “justified” because there is no alternative – in view of the refutation of the contradictions? The literal meaning of “normatively rational” is “justified in relation to the desired”. Contrary to classical rationalism of the enlightenment (and to a certain extent also contrary to Kant), no substantive, evidence-based list of principles or “good” reasons follows from directly from reason (we will see later on that the present approach can indirectly deliver such a “list” from the preconditions of discourse and what can be derived from it: see Chaps. 3.4, 3.5, and 3.6). We can therefore say that normative reason is “open” in content to considerable scope. But this openness in no way implies that the sceptic is still right in the end with his thesis of the arbitrariness of normativity. Rather, the above-mentioned possibility and the just shown openness of reason imply a different conclusion: If no one knows who has the best reasons in the dispute over justice, but at the same time reason is possible and seems to be without alternatives, then we must assume for everyone who somehow has reason, and thus for every human being, that it could be the one who knows the best reasons. It follows, that the basic order which makes this dispute possible with reasons is without alternative (which does not imply a “duty of constant reasoning”; see below). In other words: Whatever the practice of justification implies in itself, it fits better to liberal democracy than to a contextualist view of the world, and at the same time one needs some norms, given that we have learned beforehand about the existence of reasonable norms in principle. Therefore, principles of justice must be generally acceptable and therefore impartial, and we must respect our discourse partners as equals. So not only reason itself is without an alternative, but also respect for individual autonomy and impartiality are necessary. We will see later that this also goes beyond the discourse with the current discussion partner. Notabene, we only discuss the justification of respect and impartiality here (and later in this chapter also the grounds of freedom). To derive democratic institutions, separation of powers, and balancing rules as means for making the freedom of different people compatible, will be a subject of Chaps. 3.5, 3.6, and 3.7.

This argument of lack of alternatives for respect for the autonomous individual and for impartiality is further reinforced by a transcendental argument for those two principles. This transcendental argument for liberal principles can best be made visible by an example (based on Alexy 1995) which shows that respect for autonomy does not have to be regarded with Habermas (1992) as a mere dogmatic cultural-relative argument. The Alexy example makes the logical implications of our use of reason in questions of justice even more visible, and it says so: Nobody could say “My thesis X and its reasoning would be easily refuted by Mr. P, but you, dear Q, are such a fool, so you should believe it”. And nobody could say: “After we had silenced P, we could finally convince ourselves that X is a good reason for Y.” It is therefore precisely contrary to the meaning of reasons to understand justification as hierarchical or as relative to the person of the addressee – one reason is convincing and can be seen by everyone. Someone who formally uses the category “reason” in a conversation about justice (i.e. sentences with “because, therefore, since”, etc.), but then disputes the other person’s respect, ergo would contradict himself because he denies what his speech logically implies as a rule of discourse. Consequently, those who once engage in the dispute over justice with reasons and thus reason must pay attention to the partner as equals – regardless of whether they are aware of the implications of their reasoning or whether they discuss for mere persuasion and perhaps even openly pronounce it. Because it is about logical implications of our speaking in the context of the development of a normative theory (not about our purely factual self-image, from which – with punishment of a naturalistic misconception – nothing in itself follows; see also Kuhlmann 2001 and Alexy 1995). The respect for autonomy as self-determination thus offered by reason must apply precisely to the individual and thus be respect for individual autonomy: collectives as such are not even possible discourse partners. This is rather the individual arguing person. All this means that when you give reasons, they have normative implications that you cannot escape. If someone takes a position on normative questions with reasons, he or she logically presupposes what has been said. It is not said that one must give reasons; but if one does, one releases the described implications from the fact that one’s own statement can only be valid if one assumes these implications logically. This provides (beyond Kant, Rawls and Habermas) a clear foundation for the basis of liberal statehood – and it is universal because it ties in with the human practice of speaking in reasons and thus transcends cultural boundaries. All this, however, follows against Alexy and Habermas (in his case only on the impartiality principle) not already from our speaking per se; it follows however from our practice of giving reasons.

Why Reason Is Possible with Regard to Normative Questions

But how can rationality itself be justified as a basis when freedom is justified for the sake of autonomy and impartiality, but autonomy and impartiality are required for the sake of reason? To recollect: The arguments for the possibility of reason are:

- Earlier in this section it was shown that under pluralistic conditions there is no practical alternative to reason.
- In addition, a transcendental argument was developed: Who denies rationality while giving a justification for it or (!) at least occasionally in everyday life uses reason in normative questions, contradicts himself if he denies the possibility of reason. And it would be almost impossible never to formulate sentences with “because, there, therefore” on normative questions for a lifetime. This does not mean a duty of reason, but it does mean that reason cannot be rationally denied without logical error. From the practical point of view, it is irrelevant whether reason is only possible or (according to the first argument) also necessary. For, as seen, the liberal basic principles can already be derived on the basis of the possibility of reason. The statement that reason itself is “necessary” would suggest a constant duty of reason and ergo a duty to discourse on the part of all people, which hardly promotes freedom, autonomy and discourses and thus potentially evades its own fundament.
- The entire argument not only for reason but also for the liberal basic principles probably fits best with the canon of legal principles of liberal democracy with its human rights system (as well as parliaments, separation of powers, and balancing rules; in detail see Chaps. 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7). The legal idea of an only limited possibility of amendments in liberal constitutions, for example, can be seen as the constitutional reflection of the ethical idea of universalist principles, which must be considered correct not only in a randomly chosen historical context. It has already been discussed (in Chap. 1.7) that any other normative theory, if it produces contrary statements on the content of the legal system, is confronted with some difficult questions. This can be avoided with the present ethical approach.
- There is another aspect that has not yet been addressed. It is unclear whether the one who defends universalism bears the burden of proof for his thesis at all (Nagel 1997). If instead the critic bears the burden of proof, this is a further argument for the position represented here, because the critic will not be able to convincingly present any other theory of justice after the findings gained above.

One could object now: Most people in this world I will never talk to in person. Against this background, another step is essential for liberal universalism: it is not only my current discourse partner who can claim respect and impartiality. If one ever speaks at all with reasons, this logically presupposes the principle of respect and impartiality together with the comprehensive rights of freedom derived from it (freedom of opinion, freedom of ownership, freedom of assembly, general freedom of action, etc.) also with regard to only potential interlocutors, thus even for human beings, with whom one does not speak at all at present. Because reasons in questions of justice (other than, for example, statements in purely private aesthetic questions) are obviously directed at anyone who could potentially refute them – which means that once I have opened the discourse in reasons I have to acknowledge all people as worthy of respect. This is made clear by an example based on Alexy (1995). No one could seriously say: “The absent Mr. P could refute my theses at any time – but you

should believe them because of your stupidity.” Anyone who says something like that would not have justified anything (see also Alexy 1991; Nagel 1997; in parts Habermas 1983). This again makes the logical implications of the category reason clear – this time beyond the circle of current discourse partners. Here, too, it is about what “reason” logically implies – and not about what I think to myself purely de facto when speaking and arguing (this purely factual perspective is simply normatively irrelevant based on the distinction of is and ought). The argument that there is no alternative under the auspices of an open concept of rationality also applies here.

From Discourse to Action – Towards a Broad Conception of Freedom

Dignity and impartiality as key principles of discourse become comprehensively compelling in the next step: that they must also be principles of action. For the openness of reason makes it inevitable to keep the further discourse on a question (or a new discourse on another question) open in principle. And who, even outside of a discourse, violates the principle of dignity would limit the possibility of further discourses; for action (e.g. a law or even an individual act) sets the framework for possible further discourses (as a result as well, but in my opinion on detours Habermas 1983, pp. 96 et seq.; Kuhlmann 2001, pp. 27 et seq.). Also, this thesis on discourse and action again lives not only from the double step just mentioned (= reason is open; and certain actions limit the possibility of discourse and are therefore to be avoided in the light of open reason). Likewise, the inconsistency of anti-liberal models is not the only issue. In addition, the content of “reason”, which can be illuminated by a transcendental argument, appears again. No one could seriously say: “I know that if you thought about it for a week, my reasons would no longer convince you. Yet, you should believe me today.” Dignity and impartiality as the universal basis of a just coexistence must therefore apply to discourses as procedures and to their results. All this now means that the action side and the potentiality side of reasoning together – supported by the lack of alternatives and transcendental argumentation – create a normative space that binds all people even when they are not in discourse at all at the moment. Thus, the basis of a universal, rationally founded justice arises here in the form of a justification of the fundamentals of liberal democracy, together with all the considerations in detail that can be derived from it, which will be examined in detail in the following chapters.

From the thus comprehensively justified respect of autonomy and impartiality follows logically a comprehensive right to freedom in the sense of “absence of coercion” including a right to the safeguarding of the elementary preconditions of freedom such as life, health and minimum subsistence (Chap. 3.2). Because such a right is precondition for me to think and act autonomously. This connection between human dignity and freedom ultimately already appears with Kant and, as seen, more or less also with Rawls. However, the justification for human dignity and impartiality developed here leads, contrary to possible conclusions from classical discourse

ethics, not only to single freedom rights, such as freedom of opinion, assembly or association, which are particularly evidently relevant to discourse. Rather, the inescapability of respect for autonomy forces a comprehensive guarantee of freedom that includes all conceivable freedoms as we know them from the canon of human rights tradition and also the protection of the elementary preconditions of freedom such as life, health and minimum subsistence, but also a certain degree of education (Chap. 3.2). The reason for this has already been mentioned: only this fully respects the autonomy in discussing and acting – in the sense of the possible absence of foreign determination (too narrowly Alexy 1995, whereas Habermas lacks the clear justification in 1992). Furthermore, freedom itself will not function without its elementary preconditions (on freedom and preconditions in detail see Chap. 3.2). Those who, for example, would be hindered in their freedom of occupation, their secrecy of correspondence, their freedom of ownership, their freedom of the press or their spatial freedom of movement would have fewer options to educate themselves, to develop their personality, to get to know other people – and thus would ultimately also be less able to face the reasons of their fellow citizens with free conviction. Whoever did not give their fellow human beings maximum freedom would therefore not fully respect them in their autonomy, because one would restrict autonomy more than is necessary to secure the autonomy of all others. Perhaps it could be mentioned in addition: Moreover, the basic order would not be impartial because it would promote certain life plans more than others.

It can already be seen here that the concept of freedom to be developed later will be different from John Rawls' famous concept. Rawls (1971) wants to reduce the guarantee of human rights freedom to some limited areas and to open other aspects of freedom (freedom of occupation, freedom of movement, general freedom of action and the guarantee of ownership, as far as means of production and natural resources are concerned) to far-reaching restrictions (more details on the content and scope of freedom on the basis of the newly developed discourse ethical approach in Chaps. 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7). In any case, it is essential that human rights also derive from the obligation that human rights must be written down in legal form (Alexy 1995; misjudged by Sen 1999). This is due to the fact that justice also necessarily means that it has to become real, otherwise its guarantees remain witless (following on from this then Chap. 4). In a world with not only positively motivated people (Chap. 2), this, in turn, requires a sanction-reinforced and also institution-alised anchoring.

Compared to classical discourse ethics one can say: All this creates a space of universal principles from which people cannot escape – in relation to classical discourse ethics without cultural-relative addition, without dogmatic setting, without a not really clarified relationship of action to discourse, without having to refer to a virtual ideal discourse, and without “duty to discourse”. This contains the option of building up a content-related theory of justice as a theory of freedom, democracy and balancing (which will do without a list of good reasons) instead of a mere principle of impartiality with relatively little content. Of course, there is no denying the basic fallibility of humans (Nagel 2012; Apel 1976). So, what has been recognised as right so far can prove to be wrong later on. But “proving something to

be wrong” logically presupposes that there is a possibility of objective insights despite this precariousness of knowledge – otherwise intellectual history would not be a sequence of learning successes, but an arbitrary change of random subjective opinions.

The sceptic cannot save himself from all this by denying the very principle of freedom from contradiction, which is in fact the logical basis of transcendental arguments. For the principle of freedom from contradiction and thus the classical logic (i.e. the possibility of extrapolating from A to B, which is based on the fact that no contradictions are permissible within a system of statements) cannot again be disputed without self-contradiction. For if someone says that “if I deny the commandment of freedom from contradiction, then I am not bound to liberal-democratic principles either”, then that person draws a conclusion himself – which he (or she) can only do if he in turn presupposes the classical logic as valid, otherwise he will again find himself in self-contradiction. Similarly, it does not help the sceptic to claim a kind of – for others incomprehensible – private language for himself, because this can be granted to him (probably contrary to classical discourse ethics; see Kuhlmann 2001). Even if from now on we would only “speak privately” or remain silent, we would remain trapped in universalism. For the unity of discourse and action has already thrown a network of bonds over us with regard to all potential interlocutors, from which we can no longer escape.

Motivationally, but not directly normatively, the following insight continues to appear significant in terms of justification theory: respect, impartiality, and freedom are not only normatively convincing, but also from the perspective of self-interest, i.e. they would also be useful in the long term for a selfish postmodernist, for a traditional economist and for the peoples in “non-liberal” cultures. This is true if one assumes (which does not apply to religious fundamentalists, of course) that prosperity and the absence of civil war etc. are extremely important for almost everyone. Constitutional history has given rise to the idea that a distanced and impartial judgement is a just judgement and that the autonomy of the individual must be respected. This especially took place in the context of Protestant rationalisation and in the wake of the armed conflicts and religious persecutions between Catholics and Protestants in the sixteenth and seventeenth centuries. In this context, religion and tradition (“context”) have not only failed to contain, but have even tended to promote highly unkind human tendencies. This is precisely from what the idea of freedom should offer protection. Another decisive factor is that wealth-creating capitalism needs legally secured freedom and people’s free ideas and innovations (Chap. 2.5). Freedom is therefore usually a key prerequisite for prosperity. And this is perhaps an interesting point even for human rights critics, e.g. among some groups of Muslims or East Asians. But once again: The justification of justice does not need a selfish perspective and its instrumental reason (which, as we saw with the preference theories, is not really able to justify anything). The actual enforcement of justice, on the other hand, is urgently dependent on self-interest – as well as on other motivational factors (see Chap. 2.7). However, this is a different question, because enforceability and correctness follow neither in one direction nor the other from the other factor (ignored in Alexy 1995).

Refutation of Some Objections

Altogether, it still seems true that discourse theory is the most promising approach toward a modern universalism. And the argument for reason and liberal principles that there are no alternatives (in its two variations: its transcendental and its regular form; not to mention the other argument that other theories are inconsistent or unconvincing) cannot be refuted by classical and hypothetical objections (on the following in more detail see Ekardt 2016a):

- (a) My reasoning does not overlook the fact that perhaps not everyone can contribute equally to discourse. First of all, there is hardly any scale by which this can be determined without any doubt. Secondly, the same respect follows from the use of the category “reason” – and this implies that everyone can freely convince himself or herself of what has been said (which is independent of their respective intelligence). Thirdly, a “fool”, whenever someone may be stupid, can also make a striking argument in a specific individual case. Irrespective of this, no material equality of distribution is required in liberal justice (Chap. 3.4). And another question to be discussed separately is whether the ethics of discourse may undermine the human rights of some mentally severely disabled people. In the end, this is not the case, because even in the rare extreme cases, in which a mentally ill person is definitely incurable even with extreme medical progress, there are still arguments for respecting those humans (in detail in Ekardt 2016a). Last but not least: Under no circumstances is it claimed that – even if discourse and criticism are conducive to knowledge – further and further insights are inevitably possible if only several people act together. That groups solve some problems worse than individuals can also be seen in experiments in cooperation research (Nowak and Highfield 2013; Tomasello 2017).
- (b) It is harmless that even under maximum equal freedom as a prerequisite for discourses, there will never be a completely ideal discourse, which is free from any material, temporal or intellectual restrictions. The impossible cannot be demanded normatively because norms are intended to resolve disputes – and an unreal order does not comply with this requirement. That is why our basic order does not need to enable absolutely ideal discourses, but only has to facilitate discourses which are as ideal as possible. And even these “non-ideal” discourses produce the liberal principles by means of logical implication, as we have seen. These principles are the normative framework for the possible results of discussing normative questions in politics, morals, or law.
- (c) My approach is not circular in a way that I arbitrarily define the meaning of the category “reasoning” by using significance which is only supposedly universal, and thus in fact improperly universalise a typical occidental idea. For even a member of a completely “non-Western” culture engages in the category “reasoning” when he uses sentences with “because, since, therefore”, etc. It is in fact a human universal – everybody is therefore bound to the implication of this category, which she has brought about herself. Unlike Alexy (1995) and Apel (1993 and 1976, who build on the character of language and “claims” and

not immediately on the “reasoning”, even though the former seems to imply very little) I do not hide my conclusions in a perverse use of the category “reasoning”. Nor do I use a list of good and less good reasons. I only assume sentences with words like “because”. Thus, my thoughts claim to be a simple reconstruction of what every human must logically presume, if they live as a human being. It is clear, however, that enforcing a discourse rational universalism among “primitive peoples” could be difficult. These thoughts do not consider in any way what is *de facto* accepted as a reason. Such a “*de facto* recognition of the majority only becomes relevant within the boundaries of liberal principles when it comes to balancing colliding rights: In (many) cases where there is not only “one rational answer”. Nevertheless, the balancing rules (which represent the limits to democratic discretion) and the institutional rules (= balance of powers and majority decisions where “more than one rational answer” exists) can still be deduced rationally (on balancing theory see Chaps. 3.5 and 3.6).

- (d) It is also worth mentioning that universalism does not require Apel’s and Habermas’s much-criticised assumption that a characteristic of human language was to search for consensus (which is why they impose a discourse obligation on everyone) since my approach refers to “reasoning” rather than “language”. The nature of language “in itself” is irrelevant for my approach. Only the character of “reasoning” matters. Perhaps we should not call it a “procedural” theory since the *unity* of discourse and action results in *substantive* principles.
- (e) Furthermore, this universalism in issues of justice is not cultural imperialism by making freedom a universal requirement of any basic order: First, very often human rights, which indeed fully determine the extent of just politics (i.e., freedom cannot be supplemented by additional principles unless those are derived from the basic principles as well; see Chap. 3.4) collide with each other. This generates large leeway for discourse in which a liberal theory only determines the rules of balancing (including democracy based on the balance of powers as the central procedural and institutional rule), but does not dictate a certain result. Second, guarantees of freedom create a space beyond the collisions of liberties in which everyone is free to act completely arbitrarily and may live according to any cultural or collective way of life. This is called the sphere of good life. However, this must not be misunderstood as a general demand for “more tolerance with non-liberal cultures”. Widow burning in India etc. must not be respected as a “cultural tradition”. A theocracy, which can only be sustained by force, must equally be condemned because the respect for the individual is transcendentally required and religious or contextualist ideas are untenable.
- (f) Moreover, you cannot argue that a discourse-rational concept fails to comprehend the many different rationalities because there was more than *one* reasonable basic order. Roughly speaking, the idea of different rationalities is the following: “It is rational for company A to let go as many workers as possible because it has to make a profit – but it is not rational for the economy as a whole, because it increases poverty in general.” Of course, the *instrumental* rationality of an action might be considered very differently, depending on the

respective objectives. In our example, the actors, enterprise and state, have divergent goals, and we are considering instrumental rationality. However, “many different rationalities” only exist if one assumes that there is no *normative* rationality, so that objectives, norms and judgments as such are arbitrary and not rationally verifiable – and precisely this is not true for the normative basic order, as was demonstrated above.

- (g) In addition, my approach does not encounter a problem of is and ought by founding its normative theory on the existence of the category of “reasoning” in humans. However, it is formally true that such existence is a factual matter – unlike the implications of reasoning, namely dignity and impartiality, which are logically derived and not empirically found by asking the speaker for his factual preferences). Nevertheless, a mere fact is *indeed* relevant for normative theories, if it identifies an empirical *impossibility*. For instance, the norm “You all should go jogging to Mars every morning” is not only problematic in terms of enforceability, but already regarding its justification since it definitely cannot be complied with. Because norms are intended to resolve conflicts; and if norms are not just difficult but *impossible* to comply with they do not resolve any conflict (even if there were any abstract good in regularly jogging to Mars). Therefore (empirically) impossible norms are not only unenforceable, but also wrong (which is why the norm saying that we should *not* resolve any conflicts is likely wrong as well). However, it is not just some kind of simple fact that people talk in reasons. It does *not* actually occur that a human never (!) talks in reasons – and it might be existentially impossible for people to do this. Thus, there is no is-and-ought problem in my approach because is based on a theory of impossibility (though it is not a thesis of logical impossibility).
- (h) A universalist liberalism cannot be successfully criticised by saying: “De facto, freedom, democracy, etc. are an invention of the West.” This tends to be true historically and sociologically (or with respect to anthropology) though not in every detail. However, a sociological proof of origin does not show that liberal ideas are not normatively rationally valid. For what relevance should a purely factual statement about the origin of a norm have for the question of the validity of that norm (if we want to avoid a problem of is and ought – and of genesis and validity)? Ultimately, this is a confusion of factual genesis and normative validity. Genesis arguments as a critique of ideology can always lead to further verification of the validity of the norm – but logically they can never refute norms (Chap. 1.6).
- (i) This emphasis on the normative independence of a universalistic liberalism from empiricism, preferences and context does not render my discourse ethics approach “context blind” – though some might think so at first glance. Of course, a normative universalism does not state: “In Taiwan, some women de facto do serve their husbands. Therefore, it must be a good thing.” But *first*, we are free (see above) to use the margins of balancing where freedoms collide as well as our private space of the good life in order to live according to certain cultural traditions or certain “social contexts”. *Second*, although I do not admit facts – in addition to social facts natural facts are often included in the notion of

“context” – as a reason for norms, they are indeed relevant for the application of the norm. We have already mentioned (in Chap. 1.6): While I cannot derive the prohibition of environmental damage (norm) from the fact that, for example, climate change is real (fact). The actual climate change is still relevant if I have to apply a norm (here e.g. human rights) in an individual case because I need to know, whether the normatively determined requirements of this norm are actually met.

Finally, the considerations made here cannot be put aside by saying that a “final” justification of norms is not even necessary. *Identifying the right ethical approach to sustainability and the relevant normative concerns and balancing rules clearly requires a comprehensive approach to justification. It is therefore important for the theory of sustainability that we have seen that normative issues can be decided rationally and objectively – and that freedom and democracy are justified by dignity and impartiality, just as those principles are justified by reason. Based on this, the normative sustainability contents can be derived in the following chapters.*

3.2 A Sustainable Conception of Freedom: Dignity, Preconditions of Freedom (Not Capabilities), and Overcoming Individual and Business Ethics

In the following, the contents of ethics and constitutional law (on domestic, European, and international level) of sustainability will be developed on the theoretical basis described above. The starting point is the principle of freedom (with its basis in dignity and impartiality). What must a freedom look like that offers opportunities for development to all people on a global scale – permanently and therefore sustainably? What can be said ethically and in terms of human rights (in national, European and international law) about sustainable freedom? This is not so much about an empirical description of what can happen to people, for example as a result of climate change, as is often the case in books on human rights and sustainability.

Lack in Environmentalism Poses a Double Threat to Freedom

In fact, it has already been noted that climate change and dwindling resources threaten to cause problems for the human supply of food, water and fertile soils and that increased disasters, migration and wars threaten life and health. This indirectly affects almost every conceivable human freedom activity that cannot be realised without a certain physical basis. It has also become clear that all this will affect people in developing countries and future generations in many cases more than people living here and now. Conversely, of course, sustainability policy also adversely affects human rights by affecting the freedom of consumers, businesses, those who work in the economy or those who travel. Therefore, the following will be dedicated to normatively – legally and ethically – justify which freedom and

specifically human rights protection is appropriate, which understanding of freedom is correct, which balancing rules are permissible and necessary, which institutions are responsible for them with which procedural rules – and which is the specific role of intertemporal and global-crossing damage. As has been stated several times, the philosophical foundation (Chap. 3.1) is an essential aid that might be skipped by those who would like to understand the normativity of sustainability as a legal problem alone – or who would like to see it as an ethical problem, but would rather “simply recognize” dignity, impartiality, freedom and democracy than ask for its exact justification. This will be provided in the following analyses.

Classical liberalism has stood for a specific concept of freedom since early modern times, as will become visible over and over in the further course of traditional legal (and ethical) argumentation patterns (critically also Macpherson 1962). The predominant fixation on economic and consumer freedom, economic growth, wealth- and technology-related progress and jobs (and thus on a specific type of appreciation of work) as well as on the well-being of one’s own people and industry while ignoring the possibly fatal consequences for others plays an important role. This is also true for an anthropocentrism, which forgets that human freedom could not exist without certain physical prerequisites. Historically this hyperindividualism perhaps aimed more at economic development and today rather at self-realisation under postmodern auspices. In addition, in philosophical classical liberalism including Locke or Kant, but ultimately also up to Rawls (1971) or Habermas (1992), an elaborated theory of freedom, including balancing rules and balance of powers, is sometimes simply missing (and sometimes it is replaced by slogans such as that one person’s freedom ends where another’s begins). All this is not documented historically in more detail here and in Chap. 2.5 (more details can be found in Ekardt 2001), but normatively criticised and further developed in dealing with prevailing positions in this tradition. At the same time, the ideal of freedom in the West – closely linked to the stated development of prosperity – has brought the greatest opportunities for self-development and prosperity since time immemorial. Likewise, the classical ideal of freedom has more or less realised the social aspirations of the early modern bourgeoisie and then the working classes for equal recognition of all people in a society. Capitalism can hardly do without legal security, which is guaranteed by fundamental rights. And individualism can hardly exist without the possibility of personal (also) economic development. Thus, the emergence of capitalism and of liberal democracy, including the rule of law flowing from fundamental rights, is in fact closely related, as mentioned above (Chap. 2.5; see also Deaton 2013; Acemoglu and Robinson 2012; Fücks 2013; whether this linkage will remain so extremely inevitable in the rise of states like China cannot be discussed here in greater depth). Furthermore, the welfare state, which constitutes an essential element of today’s freedom, has replaced and expanded the previously self-evident mutual assistance within small communities.

One of the most relevant issues of freedom can be brought into the image of the lingering double threat to freedom for those living in distant spaces and time, but increasingly also for those living here and today in the Occident: In times of climate

change and depletion of resources, freedom based on human rights in the medium term seems to be presented with the alternative between a destruction of the vital external preconditions for freedom and attempts at an authoritarian abolition of freedom, in order to possibly change course at the last moment, since democracies seem to be working too slowly (see also Fücks 2013; Radermacher and Beyers 2011). A similar problem exists e.g. in security policy, perhaps even more severely; this cannot be elaborated here. Addressing these challenges is therefore – to put it more generally – about overcoming the alternative between a classical or even economic liberal or postmodern hyperindividualism (as well as a purely technical-scientific oriented empiricism or naturalism) and a religious or traditional “stronger subordination to the community” (exemplarily Habermas 2005).

Social Ethics Instead of Individual (or Corporate) Ethics

Freedom has been based on the interpersonal discursive relationship in Chap. 3.1. This might be confusing for some, because it means that not duties, but rights are the starting point, which then in turn lead to duties. In the following, the primary duty of individual citizens and companies will legally and ethically prove to be establishing and preserving the liberal democracy both nationally and transnationally, and to follow the measures deriving from the reinterpretation of their basic principles. All questions regarding the “distribution of duties” between people thus become questions of the theory of balancing, including the associated order of institutions and competencies, without the need for any kind of separate individual ethics or corporate ethics. Consequently, in the further course, human rights protection is not analysed as a direct effect of fundamental rights between people, but as a claim against the respective national or transnational public authorities, which is supposed to ensure an appropriate balance of freedom between those affected. Thus, a concept of justice of an ethical and legal nature will be offered that explicitly replaces separate corporate or individual ethics and determines the role of the individual in social ethics: in the form of statements about who can be obliged to what and that the individual must help bring about the correct social ethical conditions (see in more detail Chaps. 3.6 and 4.2).

This “social” focus is not only explicitly provided for at all legal levels, which are not based on basic duties or the like (see norms such as Article 1 para. 3 of the German Constitution and 51 of the EU Charter of Fundamental Rights (CFR); see also, for example, OHCHR 2009; generally on CFR Peers et al. 2014; von Bogdandy and von Bernstorff 2009; Ekardt and Kornack 2010). The social focus is also ethically reasonable. Despite ethics is based in interpersonal relations, complex conflicts regarding the freedom of A and B can often only be meaningfully regulated, if they are first mediated by public institutions. These institutions are the formal addressees of the rights to freedom, and they have to balance the conflicting interests, especially as a large number of interests are often directly and indirectly affected by a conflict (Chap. 3.6). Taking into account the separation of powers which will be derived later (in Chap. 3.5), the balancing of interests is often only possible if it is

done not solely a court, as would be the case with claims of citizens against citizens, or even by individual citizens themselves. A company ethics and individual ethics is thus only considered possible to the extent that it obliges us to create appropriate conditions of the social order and to follow its guidelines. Otherwise it would hardly be possible to balance the commitments in an orderly manner and to concretise them sufficiently as a result. This also means that the real problem of ethics (and law) – which are the conflicting freedoms or concerns – cannot be meaningfully balanced at the level of a human rights requirement for individual companies. (We will see in Chap. 4.2 that not only the normative weighing of the right goals, but also the de facto implementation of sustainability (governance) must not be left to individuals and companies alone, and yet these play an important role at the governance level). This entire legal consideration of the necessity of public law naturally does not deny, however, that there are also areas of law – under civil law – in which the need for official conflict resolution is lower and therefore (at least indirectly) human rights can also attain a limited relevance “directly” between citizens if the necessary concreteness has been achieved in individual cases through legal stipulation. Furthermore, there are certain conflicts in life that can be resolved “self-regulatively” without any intervention by public law or civil law.

Human Dignity and Impartiality

The next step is to further clarify the principles of human dignity and impartiality. As we have seen (in Chap. 3.1), these are the basic principles of liberal-democratic normativity. It has also been pointed out that the principle of impartiality – which many see as the very core of justice – represents the more general statement: justice means something other than selfishness. It means objectivity in the field of normativity in the sense of independence from special perspectives and in the sense of general comprehensibility. This statement on its own is rather vague (with Hegel against Kant) and does not provide much of a concrete guideline; ultimately, it is already contained in the other principle, the principle of human dignity. In terms of content, human dignity is thus the actual basic concept of liberal ethics or theories of justice and constitutions that needs to be interpreted. This term plays an even greater role in legal discourse, due to explicit terms used in constitutions such as Article 1 of the German Constitution and Article 1 CFR (McCrudden 2008; Ekardt and Kornack 2010). With regard to human dignity, Article 1 CFR in the EU and Article 1 para. 1, first sentence, of the German Constitution state: “Human dignity is inviolable”. However, this sentence does not give any further indication, what dignity concretely means. In Chap. 3.1 it was justified ethically that the basic norm of liberal-democratic orders is to be named as the necessary respect for individual autonomy.

Human dignity is *prima facie* the fundamental norm in the liberal-democratic system, and now it is even more important to prove that this is also the right understanding of human dignity in a legal interpretation (how this avoids various problems of other interpretations of dignity is discussed in more detail at Ekardt

2016a). Until now, it has been shown that the principle of human dignity (= the necessary respect for the autonomous individual) is the indisputable basic condition. This, as seen, applies to anyone who has ever argued with reasons about normative questions, i.e. has behaved rationally normatively.

It has also been shown that dignity is the basis of freedom. Liberal-democratic constitutional law can use all this to create legal interpretation of coherence. It is shown e.g. by Article 1 para. 2 of the German Constitution that the principle of dignity does not simply mean the value of humankind. It says: “Therefore (= for the sake of dignity), the German people profess inviolable and inalienable human rights”. The same can be found in the preamble of the International Covenant on Civil and Political Rights (ICCPR) under international law by establishing all human rights in dignity. For the EU, this interpretation is also confirmed by the formulation of the Charter of Fundamental Rights materials of dignity as a “foundation” of freedom. And that would make little sense if dignity simply meant the “value of a human as a human”, because this is hardly the overall meaning of freedom and human rights. So, dignity seems to be something that needs further explanation, and that is exactly the common core idea of all human rights and all spheres of freedom. But what is it now? Legally and ethically it is precisely the respect for the autonomy of the individual, who should be able to live a life according to their own ideas and rules – with the proviso that all others must equally have this possibility. Against this background, the point that those Charter of Fundamental Rights materials also speak of human dignity as a “right” means that human dignity is basically the right to have rights. For Europe, also beyond the EU, the fact that the European Convention of Human Rights, which applies to the geographical area of Europe under international law, and the European Court of Human Rights (ECtHR) do not explicitly standardise human dignity in the first place, but rather presuppose it as a basis. According to its interpretation, “the essence of the Convention is respect for human dignity and human freedom” (ECtHR of 29/04/2002-2346/02). All this will be supported when, through the figure of the general principles of international law, the basic ethical construction of universal normativity will later prove to be a necessary part of the law (Chap. 3.4). In all this, the ECJ makes no further statement on the content of the principle of dignity, which leaves ergo room for the derivation developed here (see in particular ECJ, C-36/02, ECR 2004, I-9609 and ECJ, C-13/94, ECR 1996, I-2143). Dignity as a common basic idea and foundation of freedom shows not only the content of dignity but also that ethics and legal interpretation converge in the basic construction “freedom for the sake of dignity”. All this must be well understood in order to subsequently develop a concept of freedom and, in particular, sustainable freedom.

The intrinsic value of every human in the sense of a prohibition of degrading treatment – which many consider to be the real meaning of the principle of dignity – can nevertheless be guaranteed under fundamental law; its place, however, is a special aspect of the general right to freedom that is described, for example, as a general right of personality in Article 2 para. 1 of the German Constitution. As it is difficult to determine when this is really disregarded, however, this category should be handled more carefully than it has sometimes been done so far.

Ultimately, the autonomy aspect is thus profiled in relation to the non-object aspect. The aspect that the personality as an autonomous being and less the human being as such is the subject of fundamental rights is also the position recently expressed by the ECtHR, understood as a cross-section of European legal systems (see ECtHR of 08/07/2004-53924/00 with regard to the status of the foetus). However, the ECtHR may not draw the correct conclusion if it assumes that dignity as a requirement of respect for autonomy denies the foetus – and thus possibly future generations in general in the sense of the sustainability debate – a position under fundamental rights (see Chap. 3.3).

Given that the principle of human dignity is the foundation of freedom, it is not a fundamental legal and ethical right on the basis of what has been said about content, ethical justification and their relationship to freedom (the point that all fundamental rights are rights to freedom, that guarantees of equality do not contain any further statement, that social rights are to be conceived as rights to the preconditions of freedom and that also procedural guarantees are merely a procedural expression of civil liberties will still be dealt with). As seen, Article 1 para. 2 of the German Constitution as well as the European law explicitly emphasise the basic character: Human rights are guaranteed (“darum”/“therefore”) for the sake of dignity, i.e. they are something distinguishable from dignity. Furthermore, at least in Germany Article 1 para. 3 of the constitution speaks of “subsequent” fundamental rights, which does not sound as if dignity were such a right. Moreover, according to Article 1 CFR and Article 1 of the German Constitution, for example, dignity is “inviolable”. In this way, however, it can only have a content that can never be violated. And this would indeed be plausible for a “reason of human rights” that cannot be abolished and is not focused on individual case applications and balancing of conflicting interests. This whole concept is also in accordance with Article 1 of the UN Charter, according to which people are born “equal in dignity and rights”, i.e. dignity and rights are precisely distinguished. All this leads to convergence with the ethical derivation (in Chap. 3.1). Likewise, the wording of the various constitutions of liberal democracies or the constitutional practice cultivated there can, as far as I see, be reconciled well with that position; at least, unwritten basic norms are essentially present everywhere, e.g. also in the USA (at a glance McCrudden 2008; at a closer look Calliess 2009). And if the question is not mentioned in a constitution in more detail, it is precisely because of this openness that the constitutional formulations of the nation state seem to be open to such an interpretation, especially since the UN Charter, the EU Charter and other transnational legal documents demand such an interpretation. For all these reasons, human dignity is not merely “no human right”; rather, because of its basic character and its inviolability, it appears legally and ethically more as an interpretational source and as the reason for freedom rights than as an independently applicable norm (for EU law and its interpretative sources, all this is explained in even more detail in Ekardt and Kornack 2010).

What Does Freedom Mean? Against a Narrow Conception of Freedom

But what does this mean for sustainable freedom? In the classical liberal tradition, freedom is traditionally understood as the defensive absence of foreign coercion, more precisely: as the absence of state intervention. For Hobbes and Locke, legal freedom exists in what we are allowed to do and what others are not allowed to prevent us from doing. For Kant freedom is independence from necessary arbitrariness on the part of a fellow human being, provided that it can exist together with the freedom of all people according to a general law (Kant 1978). Article 2 para. 1 of the German Constitution, the general right of freedom of the German Constitution beyond all special freedoms such as freedom of the press, freedom of opinion or freedom of assembly, stipulates: “Everyone has the right to the free development of his or her personality, provided that he or she does not violate the rights of others and does not violate the constitutional order or the moral law”. The provision does not say exactly what is meant by freedom, nor does Article 6 CFR or Article 5 of the European Convention on Human Rights (ECHR). Many similar provisions could be cited, such as Article 13 para. 1 of the Italian Constitution or the 14th amendment of the US Constitution. The lack of restrictions and the fact that freedom is based on human dignity (and its discursive rational basis), lead to the conclusion that freedom is to be interpreted broadly.

As already noted in the foundation of theory of justice (in Chap. 3.1) against the classical discourse ethicists and against Rawls (1971), this cannot in any case mean a mere excerpt from freedom in the sense of individual, particularly important activities of freedom (freedom of opinion, freedom of assembly, etc.). Thus, such a narrow concept of freedom may not distinguish – legally and ethically – a kind of right freedom from some kind of “false” freedom and accept only the first as protected under human rights (and not e.g. watching soap operas on TV, eating meat, taking a plane etc.). As with Locke or Kant, this ignores the fact that it is not per se clear which is “acceptable” and which is “unacceptable” behaviour, or is more discourse-ethically spoken: Any exercise of freedom is first of all protected as a prerequisite of free discourses. This fundamental rejection of a narrow concept of freedom is valid regardless of whether one understands false freedom as “consumerist egoism”, “indecent acts”, “committing crimes” or something else. Whether these things are to be forbidden can only become apparent in the balancing of various forms of exercising freedom – see for instance Article 52 CFR and also the aforementioned Article 2 para. 1 of the German Constitution that mention the balancing without providing any narrow interpretation of freedom in itself. This means that also non-sustainable actions (like eating meat or flying) will have to be part of the balancing (in Chap. 3.6) between different spheres of freedom. All in all, a broad understanding of freedom has both a legal and an ethical basis. It is still to be shown (in Chap. 3.4) that there are no other principles in addition to freedom – and that only freedom including its many derivatives (!) constitutes the material for balancing.

Contrary to popular belief (e.g. ECtHR of 06/11/1980-7367/76 in people held in custody), it is not only ethics and legal norms explicitly (!) aimed at a broad understanding of freedom, such as Article 2 para. 1 of the German Constitution or Article 4 of the French Declaration of Human and Civil Rights, that should be understood as such. Rather, the same statement can be taken from standards such as Article 6 CFR and Article 5 ECHR in European and international law, although many interpret the “freedom of the person” mentioned there as mere protection against arrest. This narrower reading would indeed correspond to the legal history of “freedom of the person” over the past centuries. It would, however, contradict the principle of human dignity, which is guaranteed ethically and in terms of national and transnational constitutional law, and the comprehensive freedom it guarantees, as I have already said. Furthermore, the wording of personal freedom in these standards does not impose such a narrow limitation. If this argument applies, this applies under international law not only to Article 5 ECHR, but also to the Global Covenants on International Law (for more details, see Chap. 3.4).

But how does sustainability derive from freedom? The legal interpretation in the EU and e.g. in Germany is based on a concept of freedom which essentially limits the freedom of the citizen to freedom against state power (in Germany, for example, see a famous ruling of the constitutional court: BVerfGE 50, 290). In classical liberal philosophy, freedom would thus be “freedom from the law” as freedom from state coercion (Correll 1998; Alexy 1986). This is then further specified in various individual fundamental rights for individual areas of life in national, European and international law to the effect that separate regulations for balancing (legally referred to as barrier regulations) are already in place. Articles 15, 16, 17 CFR and Articles 12 and 14 of the German Constitution, for example, as well as the free movement of goods, services and company branches under European law contain strong guarantees of economic freedom. The relationship between fellow citizens and global and intertemporal conflicts have therefore not yet been key topic of the constitutional debate. Whether freedom is ultimately “used” and whether external conditions for a certain desired exercise of freedom are given – which is the case to varying degrees with the citizens – seems thus to remain solely the affair of the citizen. If someone does not bring along the educational or financial conditions for exercising a freedom right, for example, this is not a problem of freedom itself from a classical-liberal viewpoint. However, the traditional classical liberal understanding of freedom already includes becoming active and being involved in state decision-making processes can also become of key importance. But this is the exercise of freedom and not a precondition for freedom, even if both are sometimes mixed up; that is why a conceptual dispute about “also positive or only negative freedom”, however popular it may be with some philosophers, is neither necessary nor helpful (see Taylor 1992 and Berlin 1969 as an example; moreover, the debate about negative and positive freedom mostly mixes freedom and preconditions for freedom as an example also Correll 1998). Attempts to distinguish between political, legal, moral freedom, etc. also appear unclear in their meaning and do not really go any further: There is only the one freedom that promises action in the absence of coercion, whatever it may consist of – in shopping, in singing, in participating in an

election, generally in political participation, in forming and expressing an opinion, in forming property, etc. As will be confirmed time and again in the following, there is no difference in content between an ethical (or “only political”) and a legal right to freedom (diffuse in this respect: Forst 2002).

Environmental State Objectives and the Alleged “Legal Principle of Sustainability”: A Misleading Debate

Sustainability and, more specifically, the protection of the climate and the conservation of resources have rarely been discussed in terms of being guaranteed by fundamental rights in the past, but are rather classified under the heading “state objectives” to protect the environment, i.e. with reference to norms such as Article 20a of the German Constitution or Articles 11, 191 TFEU, 37 CFR (not formulated as a fundamental right despite their position in the CFR), which generally commit the public authorities to this. Protection requirements, for example to the effect that public authorities could be obliged by law to steer citizens’ behaviour more towards sustainability and thus protect the freedom and conditions for freedom of all people, are not in line with the classical anti-state understanding of freedom described above. Instead, public authorities are obliged to protect the environment to a certain extent, but within a relatively indefinite range, i.e. by standards that are not legally enforceable for the citizen and have a rather programmatic and vague content. The first EC Environmental Action Programme of 1973 also spoke of a responsibility towards future generations. Furthermore, Article 2 of the Treaty of the European Union (TEU) explicitly lists sustainable development as an EU objective – even if the term is predominantly related to economic life, which could lead to a certain narrowing. In addition, Artikel 191 TFEU (as the third constitutional document of the EU besides CFR and TEU) contains several other principles, e.g. the prudent and efficient use of natural resources and the precautionary principle (see Chap. 3.5 and Ekardt 2016a, b; Calliess 2001; Sands and Peel 2018). Furthermore, the preamble of the CFR explicitly states: “The Union ... strives to promote balanced and sustainable development”; in addition, explicit reference is made to “obligations” of those living today towards “future generations”, which is again more like a norm such as the Article 20a of the German Constitution. Article 37 TFR further states: “A high level of environmental protection and improvement of environmental quality must be integrated into the Union’s policies and ensured in accordance with the principle of sustainable development”.

Nevertheless, it seems essential – ethically and in the interpretation of the law – to focus primarily on fundamental rights:

- General objectives such as Articles 11, 191 TFEU or Artikel 37 CFR are far more open than fundamental rights in terms of substance (Arndt 2009; Steinberg 1998). Fundamental rights are the strongest element of a liberal-democratic constitutional order. This will become apparent when we see that they are more easily contoured by balancing rules (Chap. 3.6) due to their clearer content and,

in contrast to objective-legal standards, are easier to legally enforce and therefore more secured by the courts (Chap. 3.5). The first part of this argument also applies in intertemporal conflicts with future people, whereas the second part requires the creation of an institution entitled to bring an action on behalf of the court. Accordingly, the basic ethical approach (in Chap. 3.1) also guarantees rights and not possibly vague obligations.

- Moreover, overcoming the purely economic understanding of freedom, which was highlighted above, could be the essential desideratum of a more sustainability-oriented interpretation of the law. For the sake of dignity, freedom is legally and ethically central to the further development of normative sustainability; and the idea of equal freedom (as we will see in a moment: essentially supplemented by the protection of its preconditions) is directly linked to fundamental/human rights, because it is the term that reflects their cross-section.
- By the way: cuts in sustainability “for the sake of the freedom (or its preconditions) of concrete people” (as they are anchored in fundamental rights) could also be much more plausible in motivational terms (Chap. 2) than the common, rather misleading frontal position “self-development versus sustainability”, as it is latently implied by state target standards.

All these arguments also apply when one thinks directly of a “legal principle of sustainability”, whether in national, European or international law. This makes it all the less plausible that this is the current focus of the legal sustainability discourse (which, in any case, strongly resides in explicit references to the word sustainability in laws: Chap. 1.5). In EU law, such a principle is undoubtedly contained in standards such as Article 2 TEU, but its effectiveness is subject to the concerns I have just mentioned. In addition, this then evokes the well-known discussions about the definition of sustainability (Chap. 1.5). In the case of Germany, it may be open in national law whether such a legal principle of sustainability exists at all in the sense of a constitutional principle beyond concrete environmental references (this can ultimately be affirmed, but only through a new interpretation of freedom, which makes new human rights contents and also new objective legal contents possible). In international law, the situation is more complex, but in any case only to a limited extent helpful, due to the concerns described above. It is true that the corresponding approaches to international law receive a lot of verbal-rhetorical attention. However, they are often not even (vague and possibly not enforceable) law, but from their outset only non-binding political recommendations. In particular, Agenda 21 of Rio de Janeiro, which has popularised the principle of sustainability, is explicitly not legally binding and formulates merely general political intentions. And the numerous other international treaties that mention sustainability also have a problem in addition to their often missing or limited binding character due to their lack of concreteness or even judicial enforceability.

In general, the emergence of the word “sustainability” in any international law treaty is not relevant for normative sustainability and for the instrumental implementation, but rather to find out whether the law constitutes a legally binding demand for (substantially) more intertemporal and global justice. In this respect, it

is astonishing that the current international legal discussion on the question of the right understanding of sustainability often does not advance at all and promotes already trivial indications (such as the existence of any environmental law norms in almost all nation states) as decisive evidence for the validity of a principle of sustainability under customary international law (on this strange source of law in Chap. 3.4) (exemplarily Cordonier Segger 2008; more cautious Bugge 2008; Bugge and Voigt 2008 and Unnerstall 2005). It should be noted that all of this does not refer to governance instruments under international law to enforce individual sustainability aspects such as climate protection (Chap. 4), but to a general, constitutional principle of sustainability.

Environmental Rights: A Misleading Debate

Of course, there has long been a controversy over whether environmental protection (or now maybe sustainability) is part of fundamental rights (Boyle 2012; Hiskes 2009; Vanderheiden 2012; Steinberg 1998; Gibson 1990; Nickel 1993; Sands and Peel 2018; Donnelly 1993). In the scientific debate on international law (ignored by legal practice), the idea of strong fundamental rights even free of any balancing seems to find friends, whereas in parallel domestic debates human rights to a sound environment are considered far too diffuse in terms of content, moreover largely negligible and therefore ultimately worthy of criticism (exemplary of Discourse Raz 2009; Nickel 1993; Gibson 1990; Donnelly 1993; Hiskes 2009). Indeed, if such a guarantee of fundamental rights existed, it would induce the problem of necessary balancing with other people's rights; this problem exists, however, for any guarantee of freedom and preconditions of freedom, and it will be shown later as constitutive for law and ethics as such (Chap. 3.6). However, the issue of human rights and sustainability deserves much more general consideration. In addition to the questions of preconditions of freedom, of intertemporal and global fundamental rights and of conflict resolution between different freedom holders, this also concerns the question of protection against uncertain impairments (i.e. the precautionary component) and the question of a system of rules of balancing and separation of powers between various public institutions that is in line with sustainability and is generally compatible with the liberal-democratic basic principles (in contrast to that, the typical "broad" perspective on "human rights and sustainability" in the "anthropocene" can be e.g. found at Kotzé 2014). In the following, a new legal and ethical approach for these issues that is not based on legal policy but on legal interpretation, i.e. interpreting freedom in the existing national and transnational constitutions.

In the judicature of national and transnational constitutional courts, fundamental protection rights are generally known in occasional cases (!), which thus no longer only prescribe a defence against impairments of state freedom, but also a protection of the citizen by the public authorities against the fellow citizens (see, for example, Giegerich 2004; Susnjar 2010). This could potentially include the implementation of more sustainability, but so far more theoretically, provided that ambitious

sustainability goals like the one set out in Article 2 of the Paris Agreement. The more recent discussion on international law is more complex and, like the German debate, will be commented on in the following. In any case, the situation with the ECtHR and its case law on European human rights protection is as described. Like, for example, the German Federal Constitutional Court, the ECtHR has, in non-environmental cases, abstractly recognised obligations on the part of states to protect their fundamental rights, albeit to a modest extent. The ECtHR – although it does not include the protection of life and health against non-immediately deadly threats under Article 2 ECHR, but in a strange turn referring to the right to privacy under Article 8 of the Convention – has already granted information rights on environmental damage (ECtHR of 21/01/2009-67.021/01). However, all ECtHR environmental cases are ultimately limited to ensuring that, within the framework of administrative decisions, the concerns of individuals are adequately examined and, for example, the facts are carefully clarified (ECtHR of 03/07/2007-32015/02). Although this is important (Chap. 3.7), it is only a sub-aspect. An obligation to enact other, more effective laws on the basis of environmental human rights, which would trigger a reorientation of society as a whole and not merely “keep my private sphere free of some kind of noise” has not yet been the subject of ECtHR judgments. In any case, factual court opinions do not have to be correct per se; they do not “apply” either, because judgments only decide a concrete lawsuit, but do not prescribe any general abstract norms, except in Anglo-Saxonian law (see Chap. 1.7).

The Key Role of Elementary Preconditions of Freedom for Sustainability

Climate change and scarcity of resources do not in themselves impair freedom, but they may affect the preconditions for freedom. These, however, do not occur in classical liberal philosophy. Rather, liberal classicism is dominated by the problematic idea of above all economically understood freedom in the spirit of an exaggerated anthropocentrism, i.e. a certain concept of man and nature, and the exaggerated ideal of progress and growth. At the same time the possibility of freedom without even minimal external conditions is implied: a kind of Cartesian hybris of a human as a spirit creature existing independently of anything material that lives on an endlessly usable earth. Ultimately, this negligence of nature is an essential characteristic of occidental thinking since the Enlightenment (closer Ekardt 2001). The fact that many people in this world lack food, clean water and basic education is not a problem of freedom according to classical liberals. But climate change in particular threatens world food supplies, water supply, world peace and security from natural disasters (Chap. 1.2). At the same time, food security or general poverty reduction are key concerns, the pursuit of which could be at the expense of climate and resource protection. Especially the right to food thus plays a multiple and central role in the question of just societies (for details see Chap. 3.4; see also von Braun 2015; Ekardt and Hyla 2017; Breining-Kaufmann 2005).

Since these concerns can be described as elementary preconditions of freedom, even the relevance of climate change, but partly also of other resource and sink problems, can be stated for almost any kind of guarantees of freedom. The endangered physical conditions of freedom such as life, health and food are widely even explicitly standardised as human rights, even if a general conception of the preconditions of freedom is missing in legal interpretation. Thus, there are indisputably the rights to life and health as well as subsistence minimum/ food/ water, as they are guaranteed, for example, under international law in Article 11 of the International Covenant on economic, social and cultural Rights (ICESCR). Consequently, the international legal discourse consistently states precisely that comprehensive human rights relevance of sustainability issues and especially climate change (see also Skillington 2012; Sterk et al. 2013; unclear Grear 2014). The problem is also discussed in the bodies of various international human rights conventions such as the ICESCR, not only in the climate negotiations (Knox 2009a, b; Skillington 2012; Global Initiative 2015; Dudai 2009; Cameron 2010; Donnelly 1993 – often referring to OHCHR 2009, 2013, 2014, 2015). However, this does not mean that legal practice would be really impressed by it. Rather, the statement that human rights are affected by climate change, for example, is regularly combined in a peculiar way with the avoidance of a speech on emission reduction commitments required under human rights law (as an example see Knox 2009a, b; Skillington 2012; Dudai 2009). In the EU and Germany, climate and guarantees of freedom are hardly ever associated. This reluctance is remarkable, notwithstanding some questions that need to be clarified regarding the relevance of sustainability to guarantees of freedom, which have already been mentioned and which still need to be discussed in detail. Legal norms such as the right to life and health, which are already undisputedly in force, show that there are basic legal and human rights to elementary preconditions of freedom that are massively threatened by unsustainable developments. However, the idea can also be formulated more ethically and at the same time in a broader legal manner:

The focus on a normativity of sustainability based on human rights seems all the more compelling as human-rights-based environmental protection is convincing in legal interpretation even independently of individual guarantees for life, health, food, water, etc. (on the following see Ekardt 2016a; in parts similar Kim and Bosselmann 2015). A classic liberal restriction of freedom to a kind of “right to the destruction of the basis of life”, which is not matched by a corresponding right to “more sustainability”, would lead us straight into the double danger of freedom described above, which must be avoided, if freedom as a whole has been identified legally and ethically as worthy of protection. The concept of freedom contained in fundamental rights, which in an environmental context traditionally focuses primarily on the economic freedom of those living here and today, i.e. the use of the environment, therefore merits the additional interpretation that it also includes the elementary preconditions for freedom, including the existence of a reasonably stable resource base and a corresponding global climate. For without such a minimum of existence and without life and health or, more generally speaking, without a protection of the elementary preconditions of freedom that is just as

effective as freedom, freedom would be inconceivable. This has already been looked at in terms of discourse ethics in Chap. 3.1 with the result that freedom – guaranteed for discourses and real action – must broadly ensure the possibility of free development including its external preconditions. A sustainability-related protection of human rights thus already follows from the general right of freedom and its forms in the classical civil and political rights of freedom. At the same time, this protection is explicitly included in rights to life, health, food, etc. essentially explicitly in the human rights catalogues. Thus, the ethical and legal concept of freedom contains a human right to the elementary preconditions of freedom (in more detail Ekardt 2016a, b; Koenig 1994). By the same token, this means that the existence of a right to the elementary preconditions of freedom does not depend on national constitutions explicitly mentioning this right. *In essence, this right transports the subject matter of human rights protection to greater sustainability*, provided that it can be shown in a further step (in Chap. 3.3) that human rights also apply intertemporally and globally.

Basically, not only life and health as well as food belong to the elementary preconditions of freedom, but also the things mentioned in the definition of sustainability (Chap. 1.5): a right to the economic-social minimum subsistence, i.e. besides food also water for drinking/ washing/ cleaning (cf. explicitly Article 34 CFR, 11 ICESCR, but also Article 34 ICESCR and Article 1–2 of the French Charter for the Environment, which supplements the French Declaration of Human Rights), which then indirectly requires a stabilisation of the handling of many resources relevant to existence and life, but also a right to care in childhood and old age (Article 24, 25 CFR), a right to health care, a right to absence of war and civil war and a right to at least elementary education (cf. explicitly Article 26 of the Universal Declaration of Human Rights and Article 14 CFR). The right to the basic preconditions of freedom thus goes beyond a right to social aid only (in Germany e.g. recognised by BVerfGE 125, 175 et seq.). An essential aspect of the elementary preconditions of freedom is also security (explicitly mentioned e.g. in Article 6 CFR).

Unconvincing Alternatives: Ethics of Need and the Capability Approach

By the same token, there is much to be said against an alternative to a doctrine of the preconditions of freedom discussed in ethics, which seeks to determine the content of what is to be good or sustainable in the sense of a theory of goods: against an ethics of need (for instance Gough 2017), which derives its own significance from certain factual human needs. For the following criticism, it is not significant in essence whether one explicitly speaks of the claim to basic needs or, instead, following a strongly received approach of Amartya Sen and Martha Nussbaum, of capabilities (e.g. Sen 1999, 2004), to whose possibility of satisfaction the individual has an – apparently absolute, i.e. balancing-free – claim. The capability approach is very broad; it also includes capabilities such as the ability to develop emotions, imagination, sexuality, authenticity, creativity and so on. The basic direction of this

approach is certainly in line with the present position, as are the motives of Amartya Sen, for example, who has throughout his life campaigned for an improvement in the living conditions of the poorest in developing countries. Nevertheless, this approach is not taken up here for several reasons, which make the approach ethically problematic and legally incompatible (unresolved in Sen 1999, 2004, 2009; Ott 2014; Voegt-Kleschin 2013; Gough 2017):

- A need or capability approach would be based on a naturalistic fallacy: In that approach, a corresponding right to fulfilment is derived, without having a normative criterion as a yardstick, from an assumed actual need or interest in having and possibly exercising an ability (unless one reduces the approach to the statement that one may not, so to speak, be forbidden to strive oneself for the desired things). This takes us back to the objections raised against empiristic or contextualistic theories of justice (Chap. 3.1) – the need or capability approach is obviously one of them.
- The reference to a do-no-harm principle (as in Gough 2017, p. 42) does not justify an ethics of need from the outset, because such a principle does not exist (Chap. 3.6). The supplementary reference to “social participation” as a criterion for justifying needs also takes us nowhere, because the justification and content of this principle remain completely unclear.
- Furthermore, it is unclear how to distinguish right from wrong needs or commendable from non-recognisable abilities (in this sense needs and capability approaches stand in a Marxist tradition). The theory of preconditions of freedom avoids these questions, which cannot be solved without a normative criterion, by offering a normative point of orientation with the concept of freedom, which helps to clarify which needs are normatively considerable without any is-and-ought fallacy. The problem is also related to the – failing – attempts described above (at the beginning of this chapter) to follow a narrow concept of freedom and thereby to distinguish “right” freedom from “wrong” freedom.
- As a result, unlike talking about needs and capabilities, my approach avoids getting extremely vague. Beyond the fact that the individuals themselves, society or, if necessary, public authorities have to guarantee the preconditions of freedom such as a minimum subsistence level, the availability of certain resources, care for minors, and can just guarantee a general right to freedom, I do not think that needs or capabilities e.g. to be creative, to have a fulfilled sexuality, etc., could be seriously transferred into an individual “right” (this problem does not exist for my own approach, because the preconditions of freedom are largely limited to external conditions and because, moreover, a balancing with other rights remains possible: see Chap. 3.6). All of this is right in ethical, and even more so, in legal terms – even if one would solve the issue of determining the degree at which someone possesses the respective “capability” sufficiently (for example, do equal opportunities have to prevail? and if so – for example, how to deal with the fact that different people might have very different good prospects for sex; on the egalitarian debate, see in more detail Chap. 3.4).

- In addition, theories of capability and need, as far as can be seen, consistently ignore the necessity to balance conflicting interests. Can e.g. other citizens be obliged to work on Mr. A until he has developed an appropriate “ability to experience nature”?
- The follow-up question as to whether individuals may have to undergo forced therapy until they have sufficiently developed their “right” abilities (or needs) takes us to the next point: the needs or capability approach threatens, with potentially paternalistic or authoritarian consequences, to amount to an assault on questions of good life, which are currently not a possible subject of law and ethics (see Chap. 3.1; in more detail Chap. 3.4). It is no coincidence that advocates of an eco-dictatorship also argue mainly with an ethics based on physical existence and the allocation of certain basic needs by the state (Jonas 1979 also argues in this direction). This applies even if, for example, Sen is personally not very suspicious of authoritarian tendencies. The criticism of the inadequate elaboration of the problem of balancing and the encroachments on good life once more takes us back (or forward) to the debates about contextualism and egalitarianism (Gesang 2011).
- It is also too simple to justify certain needs supposedly by calling them non-substitutable or by claiming that there is a clear saturation limit (Gough 2017, p. 46). Because even if there is not enough for everyone, there is still the problem of balancing. And if one believes that the rich, for example, would have to make arbitrary sacrifices to feed the poor, then one would first have to justify this too, instead of simply assuming it.

Despite all these points, the basic intentions of the capabilities approach can be partially welcomed – and the approach actually addresses points that are relevant for de facto (!) happiness (see Chap. 2.6). In my opinion, however, the correct aspects of the needs-based approach can easiest be kept from its problematic implications and logical problems by using an approach based on preconditions of freedom. Regardless which approach we follow, the following remark still occurs: Especially in terms practical applicability, there is much to be said in favour of the elementary preconditions of freedom approach and to understand it as something general, which does not always have to be redefined for each individual in a complex investigation. However, this only works if the measure for “the elementary” in the conditions of freedom is determined based on the situation of comparatively weaker persons. For example, it would make little sense to determine the scope of the school education offered on the basis of a highly gifted pupil and his comparatively small need for schooling. Similarly, it makes no sense to use a healthy and particularly insensitive person as reference point for determining the appropriate protection against air pollutants, as German jurisdiction does (see in detail Böhm 1996). This disregard of the elderly, the sick, pregnant, children, etc. makes just as little sense as if only “average” occupations or average property values were protected under fundamental economic rights, since the elementary preconditions of freedom should make it possible for freedom to become real for all people – even the weaker. To be able to say this,

one does not need to believe, as Rawls does (1971, contrary to my opinion in Chap. 3.4), that a special answer can be given to social distribution issues.

Elementary Preconditions of Freedom Versus (Further) Freedom-Promoting Requirements

The always somewhat blurred specification of the exact level of the minimum subsistence (even before balancing it against other rights) does not refute the concept of elementary preconditions of freedom. This problem is a rather unavoidable and therefore harmless phenomenon known as heap paradox since ancient times. One can clearly say, for example, that a 1.50-metre-tall man is short and that a 2.20-metre-tall man is tall. The exact limit of when a man is small or tall (or where the boundary between a big and a small heap lies or what exactly the minimum subsistence is in money) can hardly be exactly named, but this limit does not become useless. Just as with body size, the limit may vary regionally due to different living conditions, such as different food prices, but that does not render the idea in itself vague. The remaining questions must be answered through legislation, the executive and the judicial power (Chap. 3.6). Such a slight blurring is not a specific problem of the present approach or any specific theory at all, but of a general nature. Thus, there is an ethical and legal right in national and transnational orders to the elementary preconditions of freedom, which can be built upon by further discussions on normative sustainability.

From what has just been elaborated about the elementary preconditions of freedom, something can be recognised in reverse: It remains legally and ethically correct that under no circumstances, the guarantee of freedom has to cover absolutely all factors relevant to freedom. A full and enforceable human rights guarantee, e.g. the elimination of any circumstance somehow relevant to freedom, would devalue human rights and diminish freedom, because suddenly everything would be a human right, resulting in completely unmanageable situations of balancing and a large number of issues that are difficult to grasp (Morgenthaler 1999). Legally secure, clear decisions would then be in danger. Therefore, e.g. mere psychological prerequisites of freedom are not included, such as being completely uninfluenced by inner pressure of any kind, which may, e.g. emanate from the wishes of other people. It is certainly true that it can be difficult to distinguish relevant from non-relevant aspects in a particular case. Thus, certain allegedly “only psychological” impairments can reach an intensity that justifies seeing them as an impairment of external freedom of action; this is also, for example, an essential justification for criminal law protection against insults and certain kinds of discrimination.

It is important for sustainability that the external requirements that promote freedom without, like the elementary preconditions of freedom, being absolutely necessary for the exercise of freedom, must be acknowledged. Such freedom-promoting requirements are, for example, the existence of public cultural institutions, the existence of a usable transportation infrastructure, the existence of affordable child care kindergartens (the welfare state is discussed in more detail in Chap. 3.4), the

existence of educational institutions even beyond the elementary level of education required in freedom, a well-functioning administration, etc. Other requirements just as important are biodiversity, ecosystem protection and all aspects of environmental protection in general, which are not so elementary for freedom that they are already guaranteed in terms of human rights as elementary precondition of freedom (see, for example, Article 191 TFEU). However, the less elementary character and the greater blurriness of those requirements suggest to adhere to the practice of liberal democracies both ethically and legally, and to categorize those interests as a fundamental obligation of the public authorities instead to an individually assigned and enforceable human right. To what extent the public authorities then pursue these concerns is then left to them (unless the legislator explicitly establishes a right – for example to a place in a kindergarten).

The example of biodiversity shows that the specification of the elementary preconditions of freedom, but also its distinction from the protection of freedom-promoting requirements can be slightly blurred in single cases. It results from the fact that biodiversity and food and water supplies, the state of the soil and climate protection, for example, are in a relationship of interaction; and without sufficiently stable ecosystems, humans cannot live. Other goods such as stable financial markets and solvent public budgets could also be a not insignificant requirement for promoting freedom. If freedom is key, securing or sometimes providing those goods – albeit not actionable under human rights – is a legitimate task of public authority (nationally and transnationally, just like the entire human rights argumentation). Again, according to the heap paradox, it remains crucial to all this that elementary preconditions of freedom and the other promoting requirements are different things (the consequences of the lack of differentiation of elementary and further conditions of freedom become apparent with Sen 1999, where the possession of a car is declared elementary). Incidentally, what has been established can be said without having to use a concept such as that of the common goods; rather, it results from the principle of freedom.

We have seen: Sustainability ethics and sustainability constitution (national, European, international) find a strong basis in a universalist and broad concept of freedom – that also includes the elementary preconditions of freedom. Further interests not directly based in human rights can be understood as freedom-promoting factors. This approach seems clearly superior to a theory of needs or the capability approach. State targets for sustainability play only a minor role. At the same time, all this makes it easier to understand the basic liberal principles, especially human dignity.

3.3 Intertemporal and Global Justice – The Core of Sustainability Ethics and Law

But to whom does the human rights protection of the elementary preconditions of freedom apply? This leads to the core of the normative part of sustainability theory: the question whether there are ethically and legally good reasons for consistently

expanding normative thinking in terms of time and space and thus fundamentally break with tradition. In the long term, resource and sink problems such as climate change are causing massive harm to future and far-away people who can do little to solve these problems. At least as far as they belong to the new global middle class and its consumption patterns, the people living today will thus undermine the self-determination and freedom of all people in the future. Is it perhaps necessary to start giving more weight now to people distant in space and time and to their self-determination than has been done regularly in ethics and law? And is the same not valid regarding inhabitants of other countries living today, considering that the main problem originators live in the industrialised countries (or belong to the upper and middle class in the Global South), whereas the main victims of climate change, of environmentally harmful production methods for today's consumer goods etc. will be the largest part of the population in the developing countries? Anyhow, these questions are not rendered superfluous just because they have not yet been thought of when currently valid constitutions or human rights catalogues were issued, because legal interpretation (or the interpretation of ethical theories) is not restricted to the time when it was established.

Do Human Rights Have an Intertemporal and Global Dimension? Why Rawls and Jonas Fail

Even if the focus on freedom shows that the question of extending justice temporally and spatially must largely be a human rights question (see also Markus et al. 2012), the question about the extension itself is first of all of a general nature. But traditional ethics and jurisprudence, such as classical liberal ethics and law, remain silent, especially on the intertemporal side of justice – which was simply not perceived as urgent due to a lack of economic and technical possibilities to cause damage to distant generations. The same applies to the global, i.e. cross-border side of justice (in contrast to the universal side, i.e. the application of norms in all societies; there are, although not always majoritarian, central points of reference in Christianity and classical liberalism). In virtually every tradition of justice and in every liberal constitutional doctrine it was clear until recently: people living here and now have rights – and no one else. Even for Kant, for example, it was quite obvious that rules such as the ban on killing do not only apply to acquaintances, but in principle to everyone. However, he made a difference with regard to the concrete legal order: The comprehensive totality of the rules of coexistence remained reserved for a state community. On the international level, only a limited legal regime should be conceived, namely as some kind of procedural law between the states. Kant did not construct fundamental rights across borders, nor did he construe statements on intertemporal justice. Yet the position of the embryo has long been considered relevant in intertemporal relationships, but due to its physical presence the embryo is in a situation easier to grasp; and even there, the argumentative approach to the topic has so far been unsatisfactory (see in detail Ekardt and Kornack 2010).

Rawls (1971) is also struggling with global and intertemporal justice and therefore with sustainability (Ott 2014), which is not surprising given his basic approach: If one reads Rawls' basic principles of respect and impartiality in a culturally relativistic way (as he implied it), there is hardly any reason to incorporate a local neutrality into his picture of an "original position" (depicting respect and impartiality: see Chap. 3.1), according to which the decision-maker would not know whether he or she lives in Germany or Kenya. Without identical "cultural values" worldwide, there can be no international principles of justice. Nevertheless, in his late work "Law of the Peoples" (Rawls 1999), Rawls constructs a limited reciprocal ethical significance of peoples, without clarifying its theoretical basis. Rawls also sees intertemporal justice as a question, but believes that it has already been answered by his core norms (the absolute protection of a narrowly understood freedom and otherwise by the focus on the protection of the weakest). According to the latter norm, justice should be organised to the greatest possible advantage of the socially disadvantaged despite of remaining inequalities in distribution in modern societies (for more details, see Chap. 3.4). In Rawls' opinion, this norm also contains a just savings principle (on details see Rawls 1971; Paden 1997; Ott 2014). This principle is supposed to dictate that each generation should leave behind exactly what it would claim for itself for good reasons. This sounds remarkable at first. But the Rawlsian model provides no reasons why justice should depend on basic orders opening up in terms of time. Rawls' assertion that one could also imagine one's original state as "intertemporal" by simply extending the "ignorance" (depicting their impartiality) of hypothetical decision-makers in the original position to the time of their birth (which would indeed lead to decisions that are impartial in time) does not answer the question of whether there is a reason for that or not. Rawls (1971) thus ultimately made only some kind of unfounded assertion of intertemporal justice. However, this would only suffice if the burden of proof were on their opponents and not their supporters. If this were the case, the imperative of protecting the future could well be "proven". After all, there are no discernible striking reasons against time neutrality. It should be shown here, however, that there are reasons for it. Furthermore, Rawls does not comment on possible intertemporal human rights in particular, so this has to be discussed as well.

In any case, the most famous approach regarding intertemporal justice – not global justice – was not made by Rawls, but by Hans Jonas (1979). In his work, he attempts to legitimise a "principle of responsibility" towards future people as a key norm of justice. Its basis is an ontological commandment of humanity conservation rooted in being per se, because the existence of humans proves that there should also be some. Moreover, according to Jonas, the existence of entities capable of purpose, i.e. of humans, is a kind of purpose of nature – and furthermore it is the essence of man to live. Human survival is so important that it outweighs all other goals and possibly also freedom. In addition, the power of present generations over the living conditions of future generations would give rise to a duty of care. The leading archetype of human action should be the relationship of the parents to the child or the "statesman" to the subjects.

Hans Jonas has found many admirers in politics, civil society and sometimes also in science. And yet his concept ultimately fails (critically Steinberg 1998). Jonas' approach is already dogmatic in its basis, because it contains an unfounded starting point, namely the alleged teleology of humans. The metaphysical rather than rational recourse to the "essence" of mankind does not change this – humans have no "essence" that can be determined by any comprehensible method. At best they are suitable for something from which nothing normatively follows. Contrary to an example made by Jonas, for example, it is not the "essence of the hammer to hammer". The hammer is certainly suitable for hammering, and it may have been designed for it – but you can also strike with it. In other words: Humans can live, but they can also kill themselves. This leaves behind a simple is-and-ought fallacy: The fact that there are people does not justify that they should exist. Even in its empirical basis, Jonas' transmission of motherly love to all human beings is flawed. The love of the mother or any parent – if you think that this is to be understood as something unambiguous and somehow compelling – is probably evolutionary-biologically the consequence of species-preserving genetic egoism or at least group egoism. This, however, is more likely to relate to the care, promotion and conservation of carriers of related genetic material than to people in general in a 1000 years (Chap. 2.5). The latent, albeit partly denied authoritarianism associated with Jonas and other metaphysical arguers and the resulting double threat to freedom also appears problematic.

Legal Hints for Intertemporal and Global Human Rights – Why the Typical "Climate and Human Rights" Debate Misses the Point

Legally, there are many vague indications for sustainability in the state objectives, preambles and similar legal norms. Thus, the preamble of the Bill of Rights of Virginia in 1776 formulated an obligation to secure the future, as did the constitution of Pennsylvania. The preamble of the US Constitution also promises "the blessings of liberty to ourselves and our posterity". Perhaps even this statement on the future dimension of freedom is sufficient for US constitutional law to derive an intertemporal protection of fundamental rights. Similar things can be said, for example, when Article 11 and 97 of the Japanese constitution speaks of fundamental rights which are eternal and inviolable for this and all future generations. In the interest of an ethical and legally viable justification, however, we should not stop the analysis with single findings. Furthermore, it is not listed here in detail that a large number of international law treaties affect the global justice dimension in some way by establishing obligations across state borders. The formula of the "common but different responsibilities" of industrialised and developing countries for climate protection will be discussed as an example (see Chap. 4.7).

Therefore, a more general justification for intertemporal and global justice should be sought in the following. The starting point remains the idea of human rights as classical-liberal guarantees of self-development. But freedom also has an

intertemporal and global dimension, as will be shown now. However, an intertemporal and global dimension of fundamental or human rights is therefore neither affirmed nor explicitly denied in the previous legal debate (despite the obvious hints mentioned above), but only rarely treated in more detail. However, a completely fundamental, unjustified recognition (or rejection) of an intertemporal protection of fundamental rights (Murswiek 1985; rejecting Calliess 2001 and Steinberg 1998) would hardly suffice here alone. Also, in the ethical debate the detailed justification of human rights (!) of an intertemporal nature hardly plays a role. Up to now, the intertemporal debate on justice in philosophy has generally been determined by difficult specific questions of the intertemporal dimension rather than by the question of why there should be time-spanning normativity at all. Those difficult specific questions such as the future individual paradox or the argument of ignorance of the preferences of future generations deserve attention later on; however, they do not replace the question of the reasons for intertemporal human rights protection. The situation tends to be partly similar in the legal and ethical debate on global, cross-border human rights protection (Giegerich 2004; Moellendorf 2014).

First of all, one might want to know which human rights or aspects of freedom could be mentioned at all. For instance, a future effect of secrecy of correspondence or religious freedom would be pointless. For how could we ever encroach the right of future people to practice their religion or write letters undisturbed? Rather, the rights to a basic supply of food, drinking water, breathing air and a sufficiently stable climate must be considered, i.e. freedom from impairments to life, health and subsistence minimum – this is: the protection of the elementary preconditions of freedom.

In recent texts on international law, instead of long discussions, it is often simply assumed that human rights are valid against climate change (Knox 2009a, b; Skillington 2012; Dudai 2009). It is simply not asked whether fundamental rights apply at all intertemporally and across borders (or it is simply not differentiated according to whose fundamental rights are actually endangered by climate change). However, the mere reference to the universality of human rights does not necessarily make such an intertemporal and cross-border validity of human rights plausible. In the tradition since the Enlightenment, the intertemporal validity of human rights has played no role; there was probably no discourse simply because cross-border and intertemporal freedom problems such as climate change could not be imagined. It is in this tradition that the question is generally not even discussed in the traditional legal discourse. Exceptions are only single case constellations in which a cross-border reference to human rights is manifest, for example in sovereign acts in which several states are explicitly involved, e.g. in the case of extradition requests (see for details Giegerich 2004).

It is true that norms such as Article 2 para. 1 ICCPR, 1 ECHR can be read quite clearly as if human rights only apply for those who are subject to the jurisdiction of the respective state. But this does not answer the question raised, because it is precisely what is meant by “subject to its jurisdiction” that needs to be clarified. For example, the question is whether greenhouse gas emissions accepted or even explicitly permitted in one state, including their consequences in other countries and

at other times, fall under this category. This is exactly what the arguments below clarify.

According to liberal-democratic constitutions and ethics, human rights apply to “everyone”; however, the temporal and spatial scope is usually not clarified (not even in Kant 2005), even if there are some (important) exceptions to this as in the USA and Japan – and embryos are also seen in other countries at least as holders of fundamental rights (on the diffuse arguments, which often revolve around a misunderstood interpretation of human dignity, Ekardt and Kornack 2010; see also BVerfGE 39, 1; 88; 203 in Germany). Up to now, however, the liberal order has tended to be thought of only as an order within all societies (universal) – but not as an order between societies (global) and over time (intertemporal). However, according to what has been said about the preconditions for freedom, it is at least impossible to deny the fundamental rights of young people, for example with regard to climate change (provided that some further hurdles are overcome in the balancing theory: Chaps. 3.5, 3.6, 3.7, and 3.8). The arguments below therefore apply mainly to future people and people across borders, although they also underline the relevance of long-term aspects of protection for young people.

Rights of Unborn Persons? Rights of Generations?

Before any further discussion, two things are important (legally and ethically) to bring up.

Firstly, at present and in the future no generation as such can have rights exclusively (Unnerstall 1999; see also Markus et al. 2012). Generations are not demarcably structured (therefore intertemporal as a term is more precise than intergenerational). Who exactly could be subject to any rights of a “generation”? Moreover, the search for legitimation of collective rights (since generations represent a collective of persons) would be associated with unnecessary additional problems, because such rights are foreign to the occidental legal systems and liberal ethics (Chap. 3.4). Consequently, one should avoid talking of “rights of future generations”.

Secondly, if we are talking about people who are not yet alive, by design, we can only talk about future (!) rights of future people, which could lead to today’s effects of these future rights. A few years ago, Herwig Unnerstall examined the semantic-theoretical problem of the rights of future people in detail and comprehensively. He was able to show that the talk of present rights of future people is to be ruled out for linguistic reasons alone, since its meaning would be indeterminate (Unnerstall 1999): At least the empirical fact presupposed in each standard (a very specific person X will live in the future under circumstances Y) is not clearly given for future humans. Ergo, only fundamental right effects are conceivable. However, it is obvious that the pre-emptive effect of a future (!) right to elementary conditions of freedom, for example against climate change, has the same content as the final right. For it is inconceivable what the “lessening” of the future right (compared to the final right) could contain; for this reason, pre-effects can only guarantee the very content

of those rights today. As a consequence of the preliminary effect, the further course will show that a future right can already now prohibit its own thwarting.

One could, however, go beyond the pre-effect construction and remark: As is well known, law often works with fictions. Could we not simply fictitiously simulate the existence of future human beings for rights without a subject, without even needing the pre-effect construction? Non-subject-related rights will mean a real person at some point in the future and can then be exercised. They may be comparable to rights of currently available people who are still lacking maturity. Especially in private law, there are constellations in the debate with the law of succession (regarding embryos as successor), the right of entry into commercial companies, the assignment in blank or a possibly liability-relevant right to non-production (in the case of children born with severe disabilities). Historically, such rights can be traced back to Roman law, where they existed in succession cases, for example, until the inheritance was explicitly assumed. Also, Thomas Hobbes considered subject-free rights as possible (Hobbes 1966). Many believe, however, that people who still do not exist cannot be legal entities and that this excludes the rights of future people (e.g. Murswiek 1985). Behind this – beyond the fact that purely factual support, e.g. by Hobbes, does not necessarily justify a thought – is the idea of the subject-related character of individual rights. This idea could be questioned. But doubts arise against subject-less legal fictions in an intertemporal context. Thus, the right to life and subsistence would be even less conceivable than property rights, to what a future person's current right should refer. A future person cannot be injured in life and health today.

Three Arguments in Favour of Intertemporal and Global Freedom

There are three arguments in particular for that the public authorities of today's societies already having an ethical and legal obligation to protect the autonomy of (young and) future people as well as people living in other countries, for example in climate protection and the conservation of resources – that there must therefore be a time-neutral and a global, cross-border protection of fundamental rights. At this point, the analysis is also a contribution to the current discussion under international law on the "accountability" of, for example, climate change (or the scarcity of resources) to a particular state, which one could doubt by pointing out that the state is not acting against concrete victims of those damages (OHCHR 2009; whereby the discussion under international law usually does not distinguish between the problem discussed here and further questions on multipolarity, weighing up and the precautionary protection of fundamental rights with uncertain facts – on these issues see Chaps. 3.4, 3.6 and 3.7). The arguments interpret the freedom and its preconditions that "everyone" is ethically and legally entitled to according to the human rights catalogues. As far as intertemporal justice is concerned, the three ethical and legal arguments are successively based upon today's discourses, future discourses and fictitious discourses overarching times (partly similar on the following

Unnerstall 1999 intertemporal; for the first point – with regard to cross-boarder justice – also Kanalan 2015 and Giegerich 204):

1. *Eternity argument*: The idea of universal justice as the basis of liberal-democratic constitutions since the Enlightenment is to make lasting insights the basis of all right beyond historical contingencies. Various constitutions and human rights declarations speak of fundamental rights as eternal, inalienable fundamental rights (for example Articles 1 and 79 of the German Constitution). This also corresponds to universalist ethics and only becomes plausible through it, for otherwise the legislature could not have introduced a norm and at the same time categorically assert its eternal character. Ethically and legally, this speaks in favour of intertemporal human rights protection. For in their time of life, (young and) future human beings are of course also human beings – and in view of the presently developed discursive-rational derivation, every human being has rights in his or her time of life, since he or she is a being capable of reason and autonomy. And a right that will definitely arise at a future point in time must already be considerable today. For if I damage e.g. the climate today in a way that this action cannot later guarantee (young and) future people freedom from impairments in subsistence, life and health, then I will harm them at this future point in time. But then the damage is irreversible, and the law concerned would no longer do what freedom is supposed to do: guarantee secure protection against impairment. This implies protection for future persons as well as protection against long-term dangers for young people – because they will still have their rights for life. The same idea applies to the protection of people living in other countries, for example in the Global South: here, too, it can be said that the threat of encroachments of freedom today not only exists beyond time limits, but also beyond spatial boundaries, and that a corresponding extended interpretation of fundamental rights is therefore called for.
2. *Potentiality argument*: The second argument is more difficult. Its starting point is the legal and ethical insight that human dignity is the basis of fundamental freedoms (Chap. 3.2). First of all, this shows that dignity is precisely what the common basic idea of those rights is: namely the necessary respect for the autonomy of the individual. The reason for this respect for the autonomy of the individual was, as we know, that we logically presuppose respect or dignity (whether we like it or not) towards all people as soon as we (as humans inevitably do) at least occasionally in life talk about normative questions (i.e. reasonably). It can also be deduced from this, as explained, that we must respect all potential discussants who could one day disprove our points of view and, building on this, grant them fundamental rights. Such potential discussants also include young and future people as well as people in other parts of the world. But then they deserve the same protection of freedom and its preconditions. By no means are the implications of “reason” only valid over shorter time periods. Because reasons are universally addressed to every possible discourse partner, across boundaries of time and space. That the implications of the category “reason” also transcend time and space boundaries can be illustrated by a thought experiment

that is already known from § 3 F. in principle. Nobody could say: “After we had successfully prevented the Africans A and B from joining our discussion, we were finally able to convince ourselves that thesis X is well founded”. Such a statement, as far as common problems such as climate are concerned, would obviously be absurd. Another example: even in 1400 one could not have said:” Mr. P, of course in 500 years time we will have recognised that the earth is a sphere. Nevertheless, you should believe me today that it is flat.” This also applies to norms, not only to facts such as the spherical character of the earth. Even in 1520, no Spaniard could have said: “Of course, in 500 years we will see that there are no good reasons to burn pagan American natives. Nevertheless, we should assume now that there are good reasons for burning.” Speaking today based on reasons as human beings, as we inevitably do frequently, implies respect for the autonomous individual and therefore rights for future and long-term rights for young people. Incidentally, this argument does not apply to the issue of embryos. The embryo in vitro as an individual has the potential only in a passive way, or only if there is an obligation to implant it into a woman. The difference between future humans and embryos is that their protection of fundamental rights, e.g. against climate change, does not depend on whether the individual human being is actually born. Because in any case (with high probability) there will be people in the future – whose fundamental rights are affected by climate change.

3. *Uncertainty argument*: Even in the intertemporal relationship amongst people, in view of the openness of reason (Chap. 3.1), it is not possible to substantially determine what would be fair intertemporally. However, future people cannot now participate in the necessary discursive clarification (for example in a participatory and democratic process), although they are directly affected by the consequences of such discourse on conflict resolution. Therefore, at least discursive conflict resolution with representatives of future interests is called for. However, the therefore required procedural rights for future concerns are not sufficient. This results from the above-mentioned compelling networking of discourse procedures and discourse results or discourse and action (Chap. 3.1): The discourse principles direct not only the procedure of justice discourse, but also the justice of its results, which are the prerequisite for all further future discourses. And mere procedural rights without principles regulating results would be disastrous especially in an intertemporal perspective, because only representatives could name the concerns of future people. And such representatives would naturally be less vehement than real future and young people. Against this background, open reason requires not only procedural guarantees but also guarantees of results. Such substantive requirements for “laws as results of discourse” can be sued by living people in court. For example, if the living people were defeated in a legislative process against the concerns of the future, they could seek a constitutional court in the same case and sue there for their rights to freedom as a barrier to legislation. They can therefore demand a control of results and open a second (= judicial) stage of discourse (assuming a separation of powers for the rational and impartial resolution of conflicts: see Chap. 3.5).

If future concerns were not protected, they would be structurally disadvantaged in this. But this would be incompatible with open reason. All of this is equally convincing in global terms, so that the third argument also takes hold in the cross-border direction of justice.

Refutation of Some Typical Objections

However, against the argument of eternity in its intertemporal (not global) thrust, one could at least legally object that human rights could be abolished in the future and thus refute the argument. Yet, this objection seemed inconsistent for several reasons. Firstly, this abolition of fundamental rights would amount to transforming the respective (European or national) basic order into an illegitimate and ultimately invalid basic order. Secondly, against this background it is more than doubtful whether a constitutional repeal standard such as German Article 146 of the Constitution may be understood as meaning that (here) the German people may at any time have a new constitution with any content, also without fundamental rights (Article 79 para. 3 of the Constitution explicitly stipulates that this is not possible). Thirdly, empirical criteria as to how likely and when a constitutional or human rights catalogue change could occur can hardly be seriously stated (Murswiek 1985; Unnerstall 1999). And on a purely hypothetical change of the current legal situation, intertemporal fundamental rights cannot be denied.

Of course, the future life plans of young and future people are not yet known, or at least not exactly known. Typically, this circumstance is mentioned as objection to any attempt at a theory of intertemporal and global justice (also mentioned at Markus et al. 2012). Insofar as this is merely aimed at the unclear empirical living conditions of future people, this objection addresses the uncertainty of empirical facts (including new technological developments) about the future global climate, the future ozone layer state, etc. – and thus the concretisation and balancing of future rights against other concerns, but not the fundamental justification that sustainability is necessary at all. Here, with the uncertainty about future courses of facts extending over long periods of time, there are indeed questions to be clarified (more about dealing with uncertainties in Chap. 3.5). The objection regarding the unknown preferences, however, means something else anyway: namely our ignorance of the preferences of future people – e.g. whether they would rather wish freedom rights at all or a totalitarian state. But this objection is not correct; because it presupposes the refuted empiristic ethics (Chap. 3.1) – and also has the disadvantage of making an empirically unlikely premise, namely that future generations may not need food, no drinking water, no sufficiently stable climate, etc. The question to what extent a distant future is generally conceivable or unimaginable does not arise here; it is rather about such concrete aspects when we talk about the elementary preconditions of freedom. Moreover: according to their idea, freedom rights want to give just every individual the opportunity to realise his or her concept of a good, successful life to be treated as “unknown” from an impartiality point of view. But

this requires that we do not object the rights to freedom for future individuals themselves.

Furthermore, the so-called future individual paradox or a non-identity problem cannot be cited against intertemporal human rights (Unnerstall 1999, pp. 373 et seq.; Ott and Döring 2004, p. 73; page 2006; more generally on the intertemporal debate Fikkers 2016 and Markus et al. 2012). This paradox is the following: If an action has an influence on the identity of future people, then it may not really be possible to say that this action hurts precisely these people – if we can “shape” future people, then we may also be allowed to deny their rights. But I think this is wrong. Firstly, this does not change the fact that there will be future legal entities. A single action of a single person, for example a process of procreation or the opening of an atomic repository, may influence which concrete people will appear in the future. However, this does not mean that there will no longer be any people at all; that is why there are in any case any future legal entities. But that is exactly what is needed, because in the application of fundamental rights relating to the future, it is not possible today to assign a claim exactly to one bearer of fundamental rights. And secondly, the paradox is based on a circular reasoning, or at least on a distribution of the burden of argumentation assumed to be fixed, because it already presupposes that future people are insignificant. For if they were not insignificant, they should not be denied rights or be subjected to changed livelihoods. Thirdly, even if one rejects these two arguments, one can at least not rule out the possibility that, despite the current actions, future individuals will “nevertheless” remain unchanged, because no methods are apparent as to how the exact influence of current processes on a future individual (!) could be definitely recognised. Certainly, the uncertain number of future persons has a similar effect as any other uncertain fact in the balancing of opposing interests (Chap. 3.5).

Another objection (e.g. from Page 2006), namely that the lack of reciprocity speaks against fundamental rights for the future, since the future could do nothing for those living today in return, is not convincing. Firstly, no one says that rights must always be reciprocal. The justification for human rights lies in the mutual, logically unavoidable assumption of the autonomy of human beings (Chap. 3.1). This does not mean, however, that one right arises because the other person, conversely, also recognises his or her duties or the like. Secondly, intertemporal rights, viewed over generations, are in some ways even reciprocal, as all generations “perform” and “preserve” something over a person’s lifetime. By the way, there may also be some kind of obligations towards the dead (Unnerstall 1999, pp. 52 et seq. and 129).

We have seen: There is a clear legal and ethical justification of intertemporal and global human rights to freedom and its preconditions. This justification is based on various arguments – and it cannot be ruled out by objections such as the future individual paradox.

3.4 Multipolarity of Freedom and Overestimated Factors, Also with Regard to Sustainability: Good Life, Distributive Justice, Ecocentric Ethics

However, human rights can only become ecologically relevant, in particular with regard to climate change, if it is assumed that human rights include not only a ban on (unjustified) interference, but also a right to protection by public authorities against our fellow citizens. This is very important: because those who want to pollute the environment and are prevented from doing so by the state will invoke the defensive side of fundamental rights – whereas those who want to protect the environment will invoke the protective side of those rights (which is not possible, however, if there is no protective side of human rights at all). Therefore, this chapter deals with the multipolarity of freedom – as well as with justified limits to freedom (and with unjustified ones such as the common good, ecocentrism and ideas of a “right” good life).

Multipolarity: Economic Versus Sustainable Freedom

In the more recent discourse on international law, some kind of multipolarity of freedom is generally accepted without further ado, if the point is explicitly addressed at all (Boyle 2012; Knox 2009a, b; Skillington 2012). In Germany on the other hand, the problem is traditionally strongly discussed and rather resolved in the sense of an only restrictively recognised protective dimension of human rights. In the discourse on international law, the issue is not clearly separated from the question of global cross-border validity and from the question of whether the legal consequences of climate change are simply claims against greenhouse gas emissions (mitigation) or, in particular, protection against the consequences of climate change (adaptation). However, these are questions to be separated; the question of legal consequences and balancing is dealt with in Chaps. 3.5, 3.6, 3.7, and 3.8 (and the intertemporal-global validity of human rights has already been analysed in Chap. 3.3). It should also be noted that there is a kind of discussion on multipolarity in international law in contexts other than climate change (see below).

The aforementioned legal concept of “protection of freedom where it is endangered” suggests that human rights must also include a right to (state) protection against fellow citizens (and not only in exceptional cases like in the judicature mentioned in Chap. 3.2), i.e. protection, for example, against environmental destruction threatening my freedom and its preconditions, such as climate change. This is extremely important because actions of our fellow citizens – whether tolerated or approved by the state – are generally the source of an environmental damage. “Protection” in the sense of this entire reasoning can also mean that a benefit, such as a cash benefit to secure a minimum subsistence level, is paid to the individual. Such protection of fundamental rights against public authority, but at the same time also against private persons by public authority, would remove the traditional rather non-human-rights-based classification of the protection by the state – and the

traditional imbalance of the defence and protection side of fundamental rights – i.e. the restriction of the protection side to cases of evidence.

In addition to the argument of “freedom where endangered”, which is equally valid for all legal levels, full equal-ranking human rights (Calliess 2001; Susnjar 2010; Koenig 1994; see also Sands and Peel 2018) can also be based on the point that respect for and protection of human dignity are of equal priority in standards such as Article 1 CFR. This equality is transferred to fundamental rights because dignity is the basis of the individual fundamental rights (Chap. 3.2). The synchronisation of freedom and rights of others is also mentioned in norms such as Article 2 para. 1 of the German Constitution, Article 52 CFR or the 14th amendment of the US Constitution. In international law, it can be argued respectively that the norm texts do not even distinguish clearly from the outset between a defensive dimension and a protective dimension of human rights and thus seem to be based on the existence of both dimensions. The last argument to be cited is the long-doubted distinctiveness of the defensive and protective function of human rights, as it is usually used in German jurisprudence (although in this unambiguousness only the German one; the following is not refuted by Steinberg in 1998). In particular, the delimitation of defensive rights against indirect interference – which, like protective rights, apply to those who ultimately seek protection from fellow citizens by the state – and protective rights in relation to one another seems to make little sense (more specifically Ekardt 2016a, § 4 E. II.; Susnjar 2010; Murswiek 1985).

The above said applies even if (in the interest of a system of institutions based on a separation of powers: Chap. 3.5) the protective side of human rights is clearly not to be read as a direct effect of fundamental rights between citizens, but as a right to protection against the state (cf. explicitly Article 51 CFR, but ultimately also presupposed in standards such as Article 2 para. 1 ICCPR; more specifically Chap. 3.2). And in any case, the practice of some courts e.g. in Germany does not change anything when they assume that the law (including human rights) is not affected when a “general public” is affected, as is naturally the case with climate change. Whether a right is affected does not depend on interference with others. And protective rights also do not protect anyone from themselves and do not force a certain form of good living, which in liberal democracy really does not concern public authority (see at the end of this section; in more detail see Ekardt 2016a, § 4F. IV.).

Furthermore, a further objection typical for the German discussion is that the protective function of human rights can only be an objective function of human rights – this means in the legal terminology: without enforceability and without real equality of rank compared to the defensive side of human rights due to the doctrine of fundamental rights developed by the German Federal Constitutional Court. Firstly, however, the objection does not refute any of the arguments just put forward. And secondly, the approach of the German Constitutional jurisdiction (called “Wertordnungslehre”) is largely unclear in its content and justification – with which it also cannot justify any (different) understanding of protection (notabene, court rulings cannot replace the law itself, except from the Anglo-saxonian case law: see Chap. 1.7). The court has never given reasons for the doctrine of values – beyond a

rather vague reference to an “overall view” of constitutional norms (BVerfGE 4, 7 et seq.; 7, 198 et seq.). Furthermore, it would contradict the individualistic character of fundamental rights, if one assumed a non-enforceable and less relevant character of some aspects (namely the protective side) of human rights.

Multipolarity, Democracy, and Separation of Powers: Misunderstandings in the Classical Debate on “Protection Rights Versus Defensive Rights”

More relevant at national, supranational and international level seems to be the objection that a protective dimension of human rights would deprive democratic parliaments and disrupt the separation of powers, because the protective dimension would lead to complex needs for balancing between different spheres of freedom which would then seize the competent national or transnational constitutional courts, because the results of balancing constellations are relatively arbitrary (and this gives the constitutional courts the possibility to arbitrarily overrule decisions of the parliaments). The objection also says that politics must have much greater leeway regarding “protection” of citizens. However, this objection is not convincing for several reasons:

Parliaments in a liberal-democratic constitution generally (even in the case of extreme examples like Great Britain) do not have arbitrary latitude. A democracy based on the principles of power promises more freedom (more on the separation of powers, Susnjar 2010; Calliess 2001; Alexy 1986; Habermas 1992; Koenig 1994; Schwerdtfeger 2015).

We will take a closer look at this later (in Chap. 3.5). Furthermore, legal balancing is always inevitable. Behind the conflict between environmental protection and conflicting interests is the fundamental phenomenon of law: that it is a matter of justly balancing conflicting interests, no matter whether it is about legislation or the application of law, no matter whether it is a matter of an interpretation of norms or of a discretion in balancing different norms/ rights/ principles. Ultimately, any legislation and application of law must try to meet the conflicting concerns (in more detail see Chap. 3.6). For the administration, where the legislature has already carried out this balancing to a considerable extent, the weighing up is limited to the interpretation of the norms (in civil law, administrative law, tax law etc.), which the legislature has created as an expression of its weighing up, as well as to the filling in of explicitly designated discretionary latitudes.

In balancing conflicting concerns, such as human-rights guarantees for environmental use on the one hand and human-rights guarantees for more environmental protection on the other, the respective parliament does indeed have a certain, albeit not absolute prerogative compared to the judiciary, in accordance with the idea of the separation of powers and democracy. To the extent that the conflicting interests can lead to different balancing results (or different findings of facts or different interpretations of standards), the ball is in the court of the institution with the higher democratic legitimacy, because this is likely to be the more freedom-friendly

institutional setting – to work this out in detail, balancing rules will have to be derived later on (in more detail see Chaps. 3.5 and 3.6). In this respect, however, protection cases are not structured differently from defence cases: The fact that a constitutional court is almost never allowed to restrict a parliament to a single option, but is entitled to state which actions are inadmissible, is equally obvious for both case categories. And by deriving clear rules of consideration for all dimensions of fundamental rights, the power of constitutional courts (on a domestic or transnational level) is not currently being extended, but can even be standardised more precisely (Susnjar 2010; Calliess 2001; see also Hofmann 2007).

Since, as seen, this debate is not limited to the national level, these arguments also respond to reservations about multipolarity in international discourse that exist beyond a concrete reference to sustainability. Some of these reservations under international law go beyond the reservations already reported. This often involves rights that are very relevant for sustainability, such as the right to food and water in Article 11 ICESCR as a so-called “social” human right. According to the criticism of full recognition of such protection rights, such rights are based on the point that they are linked to the availability of resources in a state and are subject to changing conditions depending on the state. They also aim, it is said, to gradually achieve the standards set out in the ICESCR. For, according to Article 2 para. 1 ICESCR, each state undertakes, individually and through international assistance and cooperation, in particular economic and technical assistance, to take measures for the full realisation of the rights recognised in this covenant by all appropriate means, in particular through legislative measures, and to the fullest extent possible. This wording does not seem to imply a concrete obligation on the part of the states to take concrete action, but only one that is indefinite in content and also depends on the financial situation; there are more political programme statements that would be subject to democratic leeway.

But this criticism of a protective dimension of human rights allegedly based on ICESCR is also not convincing (Ekardt 2016a; Sands and Peel 2018). It just repeats the debate discussed above. Classical-liberal civil rights are just not “more specific” than social rights and certainly not “absolute” in the sense of being resistant to balancing, as has just been described. Constitutions and human rights catalogues therefore always contain an explicit or implicit reference to the restrictability of these rights, even in the case of classical-liberal civil rights (see, for example, Article 52 CFR). Also, the protection of the elementary preconditions of freedom is neither generally indefinite nor undetermined due to the fact that the fulfilment possibilities are much more varied than with classical guarantees of freedom. We have already seen that this is not correct – and that there is no difference regarding concreteness between defensive and protective aspects of human rights. And the difficulties in enforcing international human rights protection, which one might last try to cite against rights such as that to food, are also not an exclusive problem of protection and performance rights – e.g. the classical defensive political liberties are encroached in the vast majority of states every day.

All of this justified the multipolarity of human rights. To put it in the language of Kant’s classic dispute with the utilitarians: not harming others is no longer more

important than helping others (provided that helping means protecting their freedom and its preconditions). Fundamental rights not only defend freedom of enterprise and property against environmental protection, as they do due to classic-liberal tradition – conversely, fundamental rights can also become the basis for demands for more environmental protection. Therefore, the right content of sustainability – and the remaining (considerable) political scope – will only emerge when we examine the rules of balancing the different dimensions of freedom (see Chap. 3.6). Without all this, it is not possible to formulate the content of a sustainable constitution and sustainability ethics, unless one leaves it at mere empty phrases. In addition, it was already stated in Chap. 3.2 that (contrary to Taylor 1992 and Berlin 1969) discussions about “freedom from versus freedom to” take us nowhere since this distinction does not have any relevant meaning.

Freedom Versus Freedom – Without Any Kind of “Common Good”

In Chaps. 3.1 and 3.2 only freedom and its elementary preconditions (and the freedom-promoting requirements that are not directly enforceable since they do not belong to the content of human rights) were recognised as universal normative principles. This means that multipolarity also fully describes the material of ethically and legally fair decisions. Freedom can therefore be limited only by freedom and its preconditions and conducive factors – and not (as in Rawls 1971, for example, beyond a core of political freedoms) by any other interests that are then often called the “common good”. I have examined in detail elsewhere (Ekardt 2016a) that allowing those ultimately arbitrary restrictions would undermine autonomy and in addition trigger affinities with authoritarian states. It was also explained there that the reference to the word “common good” or similar terms in legal texts must be interpreted consistently as an indication of the conducive aspects for freedom. That the rights of animals and plants and concepts of social distributive justice do not change anything in all this will still be discussed in the further course of this chapter. We must also take a closer look at the aspect already mentioned: that there is no “right or wrong” good life and that aspects of a good life must therefore not serve as a reason for a restriction of freedom. All this has far-reaching effects on how we analyse conflicts about the right (ethical and legal) degree of sustainability in the following.

Some may object immediately to the restriction of relevant normative concerns: It seems paradoxical that the normative principles implied by the human practice of discourse (Chap. 3.1) also conclusively determine the possible content of discourses of justice and that the entire normativity is thus ultimately traced back to self-determination and its preconditions (and freedom-promoting factors). However, it is by no means paradoxical, because there is still a lot of room for balancing and the discourses of the good life have any room for manoeuvre anyway. Furthermore, the talk of conducive factors for freedom covers a large number of normative aspects ranging from biodiversity protection to state-run kindergartens. The orientation towards self-determination is thus more a compelling consequence of the inevitably

lacking substantiality of normativity and is by no means paradoxical. Classical discourse ethics (such as Habermas 1983, 1992; in detail see Chap. 3.1), on the other hand, appears empty and too full at the same time. This is because its vague starting point, the impartiality principle, does not give any meaningful content and at the same time sets no limits for arbitrary majority decisions encroaching freedom (Chap. 3.2). And only the construction chosen here makes shows that freedom must not amount to simply wanting to decide over someone else just because one would like to do so, even though one's own self-determination is not affected at all. For this very reason, the fact that democracy and the separation of powers also serve self-determination does not change anything about what has been said; for this is exactly what they do when they mediate between the various carriers of freedom (more closely Chaps. 3.5 and 3.6).

Ecocentric Barriers to Freedom? The Maze of the Debate About Environmental Ethics

For reasons similar to the idea of a common good, the idea of animal and nature conservation as an end in itself (i.e. even where it were of no use to people) is not an ethically and legally convincing barrier to freedom. If that is correct, environmental protection measures using taxpayers' money (which is relevant to freedom) would only be justified if the whole thing is at least somehow beneficial to humanity. However, as we will see below, this is not a high hurdle. On the very contrary, the justification of sustainability and environmental protection as a liberal-democratic concern is further sharpened in the following.

Nature ethics or environmental ethics have been intensively discussed in philosophy since the 1970s. Their major intention is not to justify sustainability or to discuss balancing rules between different interests, but to establish a new relationship between humans, animals and plants in general. Environmental ethics discuss the consequences of traditional anthropocentrism, which are also diagnosed as cultural de facto impact factor for non-sustainability in Chap. 2.5. Environmental ethicists often demand a radically new morality involving all creatures capable of suffering (pathocentrics), nature as a whole (biocentrics) or even stones or tables (holism; see on some approaches Schnug and Schnug 2015; Ott and Döring 2004). However, the pathocentric/ biocentric/ ecocentric idea of individual normative positions (or rights) of animals and plants is not really relevant in practice. This is because sustainability assets such as available resources, ecosystem stability or biodiversity are already elementary preconditions of freedom or freedom-promoting factors.

Similarly, a ban on the cruel treatment of animals can be seen as a freedom-promoting factor: Kant may say that cruelties against animals (in the absence of good reasons!) are to be rejected, because this ultimately also promotes cruelty among humans. For the same reasons, the possibility of experiencing nature aesthetics, for contact with nature and for relaxation is a factor that promotes freedom: Because people without any sensation or sensual stimulation might

become ill. Moreover, what has been said about the mutual limitation of freedom and the common good is also an argument against ecocentric barriers to freedom. Regardless of all other objections, genuine environmental-ethical approaches are unsuitable for justifying sustainability because the model of sustainable development is clearly meant to be anthropocentric.

Another important aspect is that the individual rights of animals and nature tend to lead to unsolvable application problems, because it is unclear which parts of nature – which always compete with each other in nature – should be privileged. It is therefore unclear what the norms of an ecocentric/ pathocentric ethics without a human-centered (i.e. anthropocentric) starting point from which the correctness of a measure could be judged should look like. From the perspective of rats, a nuclear war may create very favourable living conditions; hardly so for lions or even for humans. Protecting nature for its own sake would therefore only mean that humankind arbitrarily declares certain parts of nature “valuable” – and so nature aesthetics is something that receives its selective and therefore meaningful, but then anthropocentric content only through its reference to man.

The core problem is, however, that for environmental ethics not only a real necessity, a meaningful applicability and the legal compliance (since the law is clearly focused on conflicts between human beings) is missing. Moreover, it is already a tenable ethical foundation that is lacking (exemplarily for a diffuse reasoning Attfield 1999 and the various contributions in Philippopoulos-Mihalopoulos and Brooks 2017, which constantly confuse genesis and validity as well as facts and norms; on these distinctions see Chap. 1.6). Why should nature be protected for its own sake? Many environmental ethics are subject to objections to metaphysical theories, e.g. by insinuating a natural teleology (in a similar way as Jonas 1979 who was criticised in Chap. 3.3). Contextualistically based, on the other hand, an environmental ethic cannot be justified in view of the traditional devastating handling of the natural foundations of life. And how should environmental ethics be justified discursively? Why should it be necessary to see animals and plants as their own starting point (beyond a widely understood protection of freedom-promoting factors in the aforementioned sense)? Not much can also be derived from the “ability to suffer” of animals (due to a is-and-ought fallacy), so that even a pathocentric approach is of limited use. The typically offered argument, that a non-expansion of impartiality would be “selfish” and “specificistic”, presupposes what is to be justified: It is questionable whether one has to face nature altruistically in the sense of impartially.

Further discussion might be needed, however, if one were to come to the conclusion that a discourse-analogous relationship to animals, at least to higher ones, is possible (Werner 2001; in this direction also Schnug and Schnug 2015). Dolphins, great apes and possibly even thinking robots could keep the debate going. In any case, sustainable freedom provides legal and ethical legitimation for normative sustainability and for the environment in a very broad sense. And to justify that, we do not need a discourse about rights of nature as a key topic.

There’s one more thing we should be aware of: If we all become vegans, no more farm animals will be bred. But how do you compare the options “painful life” with

not being born at all? Logically one can say little about it, because in the second case there is nobody left who could find the situation somehow (good or bad). And even emotionally, I can ask myself: Would I prefer having never existed to living a terrible existence? And would my answer (if I had one) be one that I could transfer to an animal? The fact that there can be considerable differences in animal husbandry conditions is true, but *prima facie* it does little to change what has just been said. In addition, this brings us to the next difficult question: Can any animal husbandry, in which animals, e.g. their baby animals, are taken away after hours or days, ever really be “species-appropriate”? The whole thing illustrates that with a serious ecocentric ethic, a fundamental critique of civilization could come on the agenda in the sense of: What would allow us to take the place of all the wild nature that would exist without us?

Justice Versus the Good Life: Why Concepts of Happiness (Even Those Based on Sustainability) Are Not Any Good as Barriers to Freedom

There is another inadmissible barrier to freedom to discuss. It is the result of the distinction between justice and good life already indicated in Chap. 3.1 as belonging to liberalism. Based on freedom, one could apparently also argue against the global transition to sustainability: What is it that concerns the state at all, how I live – and isn't that exactly what is regulated with a real transition towards sustainability?

The core statement regarding the distinction between justice and good life is: Everything that concerns the freedom of several people and thus conflicts between the development opportunities of several citizens is called the question of justice. That cannot just be my business. What does not concern the freedom of several, on the other hand, is a private matter and does not concern public authority; it is called a question of good life (exemplarily for the lack of this core distinction in the sustainability discourse Hosang et al. 2005; aptly Muraca 2015). In fact, due to climate change and the disappearance of important resources, “purely private” questions of good life have sometimes suddenly become questions of justice (Jamieson 2014; Lyster 2013). In the past, no one would have had the idea of restricting the purchase of transport energy-guzzling, water-wasting southern fruits that are produced under unbearable conditions in arid regions of the world – or holiday flights to the Canary Islands. This must obviously be seen in a different way under the auspices of sustainability.

Some may find this kind of “consumer criticism”, which is immanent in sustainability, to be hostile to freedom, but this misses the point. Definitely more obviously dictatorial would be a “business as usual”, with which the conditions for self-determination for billions of people could be permanently destroyed. The state exists precisely to reconcile the exercise of freedom by different people. And if a behaviour (like flying) today – unlike in the past – impairs the freedom of others, then it may also be regulated.

Notabene: External behaviour may be the subject of political behaviour control, but internal desire as such may not. The emphasis is on “as such”; so it is up to everyone whether he or she reacts to higher energy costs through a different climate policy in such a way that he or she says “how unpleasant, now my Tenerife holiday is becoming too expensive for me” or whether he or she says “right, actually regional holidays make me much happier”. It has already been mentioned that the latter would nevertheless be helpful for the purely factual implementation of sustainability and offers empirical potential – albeit not for all people and throughout (Chap. 2.6). However, it does not provide a normative sustainability criterion, but is a question of implementation.

The fact that any normative ideal of a “right good life” or a “right happiness” and the inner attitude corresponding to it may not be predetermined follows from the theory of justice developed earlier (Chap. 3.1). The ethical and legal justification, which rejects a normative justification of post-growth, frugality or whatever form the idea of greater happiness might be – whether it is called *Buen Vivir*, conviviality or otherwise – lies in the following two reasons. The first of these two reasons interprets the interaction of liberal basic principles ethically and legally in parallel. Firstly, guidelines on a good life (i.e. questions beyond justice or freedom conflicts) and inner attitudes would obviously be an attack on freedom in favour of ultimately dogmatic, not generally justifiable interests at the starting point, namely precisely not for the sake of the freedom of others. As shown, exactly this is not allowed. And secondly, there are simply no normatively rational standards for what a good life is (Fischer et al. 2013; ignored e.g. in Jensen and Scheub 2015; indifferent Voegt-Kleschin 2013, pp. 88 et seq. and Muraca 2015, p. 70). Of course, in my personal life there is room for instrumental and theoretical rationality, i.e. rational knowledge of facts of an abstract nature and knowledge aimed at the implementation of my personal goals, but not for rational statements about these goals as such. In this respect, what was already clear to Locke, Kant or Mill in terms of the basic thrust direction can be justified here precisely: a just policy must guarantee the possibility (!) of individual happiness via freedom, but it must never regulate the good life itself – i.e. personal concepts of happiness, world views, decency etc. What a good life really is was not even really clear reading Rawls (1971); because a differentiated theory of freedom, its preconditions, and balancing is missing in his work. This also means: Frugality and (as a consequence) post-growth may be necessary strategies towards sustainability (Chap. 1.3) – but they are no normative goals in itself.

To sum up: There is a necessary distinction between justice and good life. And the latter is no legitimate object of legal or ethical rules. In terms of sustainability, this limits the normative discourse to issues of justice – but the sphere of justice is larger today than it used to be in earlier days.

Why There Are Only Limited Ethical and Legal Standards for Social Distribution Issues – Frictions of the Debate on Equality

Many, however, see sustainability problems primarily as a question of social distributive justice, which is known to be only a sub-aspect of general (ethical and legal) justice (Chap. 1.6). This is a symptom of the well-known objection to freedom-based approaches (also to sustainability) to rather “start from equality than from freedom”. Therefore, three things shall be shown at this point: (1) there is little that can be said about social distributive issues in definite terms; rather, there is considerable scope for balancing in this respect (in detail on balancing see Chap. 3.6). (2) The primary focus on social distributive equality (in contrast to equal freedom) is therefore not convincing. (3) Nevertheless, statements deducted that contribute to an ambitious duty of the public authorities to act on sustainability issues (Chap. 3.8).

In many industrialised countries, social policy has been the subject of fierce controversy for some time, not to the least because income inequality has been increasing for some time (empirically detailed Piketty 2014; also Beck 2007 and Starke et al. 2008). In the past, the welfare state was often seen as a way of securing the – in the wording of this book – elementary preconditions of freedom and external requirements that promote freedom, but now the welfare state is often criticised. This is partly due to economic globalisation (Chap. 4.11). A key concept for all points of view is in this context equal opportunities for all people. Indeed, this sort of concept based on the equal right to freedom is immediately plausible. But there are some problems that are difficult to solve. As we will discuss these problems in the following, the limits to deriving exact social distributive rules will be revealed at the same time, regardless of whether they generally demand the protection of the weakest, as in Rawls (1971), or directly aim at substantive equality (in the outcome), as in Marxist tradition. Compared to this, equal opportunities is a less far-reaching idea in terms of content, but even this less far-reaching approach already encounters problems (in utilitarianism, things become supposedly simpler through the calculation approach; see Harsanyi 1978; Smart 1978; but Chaps. 3.1 and 3.9 show that empiricist ethics such as cost-benefit analysis does not work).

Equal opportunities means equal starting conditions for all people, usually combined with the addition that “undeserved” disadvantages must be avoided or compensated for because of the equal freedom of all people. “Opportunity” may mean that everyone faces the same probability to find happiness. And indeed, freedom rights protect the right to live a life according to one’s own ideas. In addition, it is ethically and legally uncontentious that freedom as the right to seek one’s fortune implies that unequal treatment requires justification. This can be found as right to legal equality in all human rights catalogues (since this means that the freedom of the individual is increased and that of another is reduced, this actually represents a balancing rule between different freedom holders). Freedom also implies that I should be responsible for the consequences of my actions and that the negative consequences of my actions should not end up affecting others. This does not, however, lead to the inverse conclusion that all citizens have to bear in equal parts issues

which nobody “caused”, but which happen by chance (e.g. the low intelligence of a person). It is not per se plausible that all disadvantages such as a lack of intelligence or different parental homes per se must be fully compensated for by the public authorities. The point that the junktim of freedom and the responsibility for the consequences of one’s own decisions must not be overstretched is also illustrated by the fact that it is very difficult, if not impossible, to determine specific individual causalities (e.g. with regard to education) and to attribute them to “self-induced” or “socially inflicted” cases. Even more important, however, is the problem that it is not at all clear how different opportunities in different life situations can be balanced against each other and ultimately found to be “(un-)equal”.

To put it in a broader perspective: The question of “equality of what”, which has been intensively discussed in philosophy in recent decades, is not really resolvable (Sen 2009 and Frankfurt 2015, in contrast Dworkin 1977, 1981, 2006). Moreover, the universalist basis of ethics developed above simply does not give rise to a commitment to social distributive equality. The same is true for constitutional law in Western states. Moreover, the tension between the two aspects of freedom “junktim/ personal responsibility” and “protection of preconditions” (and the blurriness of responsibility) already explains the core of the welfare state issue, including the resulting vague equal opportunities. This results in a spectrum of social distributive justice that is not arbitrary, but is nevertheless characterised by large leeway and thus very different possible concretisations. This statement has a basis in freedom; state objectives such as the welfare state here can essentially only emphasise the general importance of the task beyond the area of fundamental rights, e.g. remind us of the external requirements that promote freedom.

Egalitarianism would not even necessarily have the most benefit to the socially weaker, despite all the caution with which historical experiences are assessed, if one considers the experiences in real-socialist states and also reflects the fact that in this way the performance incentives for the stronger are eliminated, and those are the ones to create the distributional mass for the welfare (Rawls 1971). Anyone who claims otherwise obviously follows a Marxist anthropology believing in really strong altruistic tendencies of humankind (critical on this: Chap. 2.6; see also Deaton 2013; Acemoglu and Robinson 2012; Fücks 2013). Capital flight to other countries when taxes are higher locally could theoretically still be prevented. At the same time, however, extreme inequality would also be counterproductive (Piketty 2014; Sen 2009), as the protection of freedom and the Junktim jointly suggest.

Just as a little excursion: Some problems of the egalitarianism and equal opportunities debate are frequently continued under the signum of anti-discrimination. This programme is penetrating Western societies to an increasing degree and is initially generating tendencies that are fully compatible with the present theory of justice, such as the mandatory gender equality in legal equality. All in all, the avoidance of discrimination makes a lot of sense under liberal framework conditions, since nobody should be disadvantaged on the basis of factors which they cannot influence. If, however, a demand for equality turns into a demand for de facto equality or even for the end of the competitive society, the problems of egalitarianism and also

certain forms of criticism of capitalism are repeated (Chap. 2.6). For not only freedom, but also progress in knowledge depends on the polarity of cooperation and competitiveness, and even knowledge itself depends on the possibility of differentiation. Moreover, the popular line of argumentation to deduce the impossibility of drawing boundaries from unclear demarcations between two entities (e.g. between men and women) that are in themselves clearly different is logically unproductive in view of the heap paradox.

On the other hand, the most discussed theorist of social distributive justice in the twentieth century, John Rawls, concentrates, as mentioned above, on the point that in the interest of a realisation of freedom a special focus should be placed on the weakest. However, Rawls overlooks the fact that protection of the weakest beyond the basic rights to freedom cannot mean that every conceivable political measure must always promote the weakest. For how could one justify this? This aim has no compelling ethical or legal foundation. Rawls (1971) succeeds only with a dogmatic and therefore unconvincing background assumption: that everyone (from an impartial perspective, i.e. not knowing their own situation in life) would express risk aversity as an absolute undoubtful priority. Generally speaking, balancing spheres of freedom, of elementary preconditions of freedom and of further freedom-promoting factors has to be analysed in a much more differentiated way (Chap. 3.6). The fact that Amartya Sen's (2009; similar to Ott and Döring 2004) capability approach is not really convincing as a further alternative has already been discussed (Chap. 3.2).

For reasons of space, further arguments against fixed social policy standards derived from ethics or constitutional law are not discussed here (but see on this for example Gesang 2011 and Page 2006). The protection of the elementary preconditions of freedom and the junktim remain as core standards, but they do not deliver any precise distributional scheme. All this does not mean that there is no political possibility to think that e.g. smaller income differentials make many people happier and therefore a high degree of redistribution should be chosen as a political programme. But this is a political programme and not necessarily dictated by the principles of justice and the constitution.

Even if justice does not prescribe a specific social policy, it does, however, state (in terms of preconditions of freedom, junktim, no egalitarianism) what can be said about social distribution issues in ethical or human rights terms. This is of course, only in connection with the balancing theory and its exemplification in terms of sustainability (Chaps. 3.5, 3.6, 3.7, and 3.8), which will nevertheless help us drawing several (!) very concrete conclusions to be drawn regarding climate change. The most important problem of social distribution is currently twofold: (a) The “weakest” of the previous social policy in Western countries are not the dependent employees who receive lower wages than “the managers”. Even the unemployed live quite adequately in many countries, e.g. in Germany, unless pathological individual biographical difficulties (e.g. alcoholism) occur. The primary underprivileged are people in developing countries – and people that will live in the future. (b) Politicians have not yet found an answer to the problem that the Western welfare state and even more so the environmental state could run into an economisation trap caused by globalisation that could lead freedom ad absurdum in a spiral of performance (rat

race) that can no longer be limited. If this is to be tackled, analyses of globalisation (Chap. 4.11) and the end of the growth age (Chap. 1.4) are needed in addition to sustainability analyses. On the other hand, an essential version of the classical distribution discourse, which among other things seeks to refuse any drastic sustainability demand because of its distributional effects, reaches a point where new paths have to be taken (see Chap. 4.7 and also Gough 2017).

The Core of Sustainable Freedom – Ethically and Legally

After all, the ethically and legally newly interpreted concept of freedom in view of the idea of sustainability is the model of an autonomous and free self-development, which aims at enabling every human being – also including on a global and intertemporal scale – to become happy in his or her own way. The promise of a succeeding practice of life that takes place within the framework of free discourses and autonomous action also applies to those who would never profit from a concept of freedom reduced to some kind of economic liberalism. This reason-based concept aims at a universalistic, pluralistic, global, intertemporal and non-possessive individualistic justice – in terms of both ethics and the law. In reformulating the well-known Rawlsian rules of justice (that underestimate the necessary specifications of freedom and overestimate what can be said about social distributive justice), this can also be formulated as the principle of sustainable freedom – that is the core of sustainable normativity.

Everyone should have equal access to the most comprehensive system of equal freedoms, compatible with the same system for all others, including young and future people, and those living in other countries and continents. The same rights to freedom also guarantee the preservation of the elementary conditions of freedom, without which life in self-determination is impossible, as well as protection against other citizens by public authorities. Freedom can only be limited for the sake of freedom – including its elementary conditions and other freedom-promoting factors. What can be said about objective normativity in detail and about democratic institutions and separation of powers, depends on balancing rules that have to be derived from freedom in the above-mentioned broad sense.

Less logically stringent, but possibly more intuitively appealing, a sustainable concept of freedom can be formulated as follows after all: Let us intuitively assume that we need three things in particular from the field of political-legal affairs for our happiness: Opportunities for freedom and development, a certain amount of prosperity, a sufficient amount of security, and all this globally and intertemporally. The concept presented here legitimises the demand for a quantum of prosperity and security based on freedom, leaving the finding of happiness to each individual. It thus establishes an order that offers the greatest chance of realising all these things – and at the same time makes it clear that the path to prosperity and security via the abolition of freedom (i.e. the proverbial “Chinese” solution) is prohibited, also globally and intertemporally and thus in questions of sustainability. Compared to the “traditional Western way of thinking”, this also implies: Liberal-democratic

constitutions need a reinterpretation under the auspices of a new concept of freedom, of a new rational foundation, and of new ways of understanding balancing and the limits of rationality in the normative sphere.

General Principles of International Law (Not Customary Law) – Further Foundations for Sustainable Freedom

At the national and supranational level, the sustainability-related contents of human rights following from all this provide a clear orientation, for example in climate protection. At the level of international law, however, these results which are based on written legal documents (in the international arena as documents of international treaty law) have the disadvantage that these are formally on a par with other international treaty law provisions. International treaties, meaning agreements between states, such as the WTO treaties, are the main source of international law the absence of a world state. International law does not seem to know a written constitution that is higher-ranking within hierarchies of norms. Therefore, human rights in international law may influence the interpretation of other international treaties (such as the WTO treaties), but do not offer a strictly higher-ranking legal framework. This changes, however, if one includes another source of law: customary international law and the general principles of law, which for centuries have represented a source of international law alongside international treaty law. Declaratorily – i.e. not constitutively –, these sources of law can be found in Article 38 of the ICJ Statute, and there is a broad consensus that these sources of law do exist. In connection with this, one can ask whether such customary legal requirements or general legal principles should be regarded as *ius cogens* – i.e. as generally binding law independent of the contractual arbitrariness of individual consenting states, as a relatively rudimentary and also unwritten constitution. They would then not only be of higher rank compared to international agreements. In addition, sustainability-related human rights would then also be valid for states that have not ratified treaties such as the ICESCR and do not provide for human rights in their national constitutions – given that freedom (as a basis for the sustainability-related contents of human rights) is guaranteed by these other sources of international law. This would mean that the legal reconstruction of a liberal-democratic ethics would receive a strengthened foundation (generally on norm conflicts between the legal levels Ekardt 2016a, § 7 B.).

The initial question is what is meant by customary international law. We speak of customary international law when legal contents correspond to general state practice, supported by a corresponding *opinio iuris*. This type of source of law is ultimately the expression of a classical understanding of sovereignty (cultivated in the absence of global ideas of justice) in which states can do what they want without being bound by universal normative standards. Through their actions and verbal declarations, the states themselves can influence which legal contents become customary law. Therefore, it is of course incompatible with precisely this basic intention to affirm a norm of being part of customary law all too quickly. The mere

fact that norms such as the precautionary principle can be found in different parts of international treaty law in specific contexts does not make them customary law (overlook e.g. by Maurmann 2008; Cordonier Segger 2008; Sands and Peel 2018). On the one hand, there is no general state practice on this principle to date. On the other hand, there is no agreement on the content of many principles, so that the existence of a legal conviction is also questionable. All the more so in the case of sustainability-related human rights, which, despite all the euphonious references to the idea of human rights everywhere, are counteracted on a daily basis by real state policy.

The other source of international law is more interesting. It is possible that the entire argumentation for sustainable freedom can be further strengthened (and law and ethics even more strongly linked) if instead of international treaties reference is made to the general principles of law (the entire stratification is missing in Sen 1999; only partially in Voigt 2006; Maurmann 2008; Sands and Peel 2018). But what are general principles of international law? Linguistically, the term sounds like a “law behind the law”, i.e., universal justice that prescribes certain fundamental things regardless of whether the respective political state order is willing to respect them or not. However, the relationship of the legal principles to such a general universal ethics often remains unclear in the debate on international law. The term “legal principles” could mean that it imports the principles of the general theory of justice into law, even where international treaty law does not provide for them comprehensively, and thus avoids as much as possible a contradiction between universal ethics and law. In a liberal-democratic constitution and theory of justice, those principles would be dignity, impartiality, freedom, protection of the elementary preconditions of freedom, intertemporal and global expansion of freedom. Based on them, a catalogue of fundamental rights such as the human rights treaties could be spelled out, followed by balancing rules, requirements of institutions and the like. This would result in a universalist international law in parallel to universal ethics based on reason, including all its implications for sustainability demonstrated above.

In contrast, conventional international lawyers often understand general principles of law to mean those principles which are purely *de facto* recognised by the states – or by a representative selection of states – contrary to the reference to the law of reason which it is already in the literal sense of the word (whereby mostly state law rather than international law itself is seen as the starting point of those “principles of law”). So, should we ask how many states have explicitly or implicitly recognised e.g. the right to food? However, this would take us to the question whether the talk of “recognised legal principles” is simply absurd. For the law of reason (or “law of nature”, at the latest since the definition of the term by Thomas Aquinas; see Ekardt 2019) is defined precisely by the aspect that it is independent of a factual, positivist recognition by any authorities or majorities. Moreover, legal principles would then be the same as customary law and therefore meaningless.

Further indications for an understanding of general legal principles referring to universal reason and its implications (human dignity, impartiality, freedom and its sustainability implications) arise if one reads the reference “recognised by civilised

nations” in Article 38 ICJ Statute. This underlines: It is not the de facto recognition by every state that matters, but rather what humans have to recognise from the normative point of view (it is therefore a matter of acceptability and not of factual acceptance, even if both are notoriously confused, and this across disciplines). In a historical interpretation, one could add that “civilised nations” in fact means liberal (rational) democracies and their understanding of law, i.e. the liberal-democratic principles were advised. “Civilised nations” thus do not mark colonialist imperialism (although the ICJ statute is 100 years old). Moreover, the term prescribes to all states the principles which liberal democracies have already recognised in principle anyhow.

If the general principles of law are to acquire a real meaning as source of law alongside international treaty law and customary law, this also urges us to accept principles of law contrary to the self-chosen, arbitrary orientation of the states. In contrast, traditional lawyers call for a “representative selection of states” when determining such “principles of law” and their recognition by states. However, the ultimately insoluble problem is then (a) how to make this selection of states whose legal opinion should be “representative” and accordingly prove the recognition of certain principles (what would be representative? which countries, for example, are representative of Africa/ Europe/ South America?); how (b) complete arbitrariness on the part of the user of the law “from the result desired in each case” can be avoided; and how (c) the whole idea of binding states against their will fits in with the traditional idea of sovereignty under international law, which is obliged to focus on the “de facto recognition of principles by states”. In any case, this would create enormous scope for the applicants of international law, which would be difficult to reconcile with ideas of legal certainty, clear division of competences, etc. (that can be derived from freedom: see Chap. 3.5). And this enormous scope is exactly the opposite of what supporters of state sovereignty would wish.

The idea that what is “generally” recognised can be determined by a (rather arbitrary) reconstruction of individual positions (“representative legal comparison”) is also contradictory to the linguistic meaning of “generally”, which means “concerning all” – and only “general” legal principles are mentioned in Article 38 of the ICJ Statute as a source of law. All this indicates that the traditional idea of customary law could also be questioned, which, however, is not pursued further here. International law in its current interpretation is already relatively strongly subjectivist and geared to the preferences of sovereign nation states, which can agree upon more or less arbitrary treaties in free decision. But from the point of view of a rational idea of law, this is something to be overcome in the medium term. For there is much to suggest that well-functioning global institutions and global law would be very helpful for freedom in a globalised world (in detail on visions of global democracy etc. see Chap. 4.11 and Ekardt 2016a, § 7 B.).

All this makes liberal-democratic ethics and its sustainability implications, including its primacy of constitutional principles over other parts of the law, even more compatible with international law. This, the shown interpretation of the logic of “principles”, the widespread practice of classifying general legal principles as *ius cogens* at the same time, speak in favour of attributing the liberal-democratic

principles a constitutional rank within international law. Another argument in favour (examined in detail by Ekardt 2016a, § 7 B.) is that this is probably the view most conducive to human rights freedom as a whole.

3.5 Sustainable Institutions, Democratic Systems, and the Inevitability of Balancing – Beyond an Eco-dictatorship

But how much sustainability and, for example, how much climate protection is specifically required in the ethical and (transnational as well as domestic) constitutional sense? As we already know, everything in ethics and law needs to be based on freedom (Chaps. 3.2 and 3.4). And the thesis of multipolarity of freedom (Chap. 3.4) makes it clear that ethical and legal justice (to its possible parallelism: Chap. 1.7) and sustainability raises questions of balancing different spheres of freedom. Continuing this analysis will take us to what can be said about normativity and sustainability in detail (besides the abstract principles developed in Chaps. 3.2, 3.3, and 3.4). By the same token, there will be no room for some kind of free-floating postulates on sustainability ethics derived from nowhere – as they may be popular among many people that mention “ethics” in the context of sustainability.

The issue of concretising sustainability also takes us to institutions, as well as to some of the most traditional questions of liberal democracies: Which institutions are responsible for determining which procedures and which balancing rules apply? How to deal with uncertain facts that are characteristic of sustainability problems? What does representative democracy really mean? And what about the relation between freedom and democracy? These are the subjects of Chaps. 3.5, 3.6, 3.7, and 3.8. This also takes us to an analysis of the overall institutional setting of liberal democracies. In contrast to what is widely practised in the discourse on sustainability, it will not be enough to mention single aspects such as the polluter pays principle or blatant statements such as that sustainability is a value judgement. And we will continue not to confuse moral sociology with normative sustainability ethics and sustainability constitutions. This – as in the whole Chap. 3 – is not about moral sociology, which considers the purely factual effect of values on human behaviour (this was dealt with in Chaps. 2.2 and 2.5).

The Inevitability of Balancing: A Key Category in Ethics and Law – Beyond “Neminem Laedere”

In general, the discussion about the right implementation of sustainability can be seen as an issue of conflicting interests and thus as a balancing problem. If you want to protect the climate for future people and limit today’s car traffic, you protect freedom – but at the cost of restricting freedom in the present. Similarly, the desire of Western companies for globalised, open markets without state regulations and

taxes collides with the interest in certain labour and social standards of many people (Busse 2003; Ekarde et al. 2009). For example, the general right to freedom, freedom of property and the promotion of economic growth and jobs on the one hand, and the right to the elementary preconditions of freedom such as life, health and subsistence on the other hand, stand in contrast to each other. These questions arise, even if many synergies between economic freedom and sustainability are possible (see Chap. 1.4). This also includes controversies about underlying facts that are relevant in this context, for example, the effectiveness of a particular political or legal instrument, the existence and precise effects of climate change, or the effects of different technological options. Since the facts are sometimes uncertain, concepts such as risk, uncertainty and precaution come into play here. In a strict use of terms, risk means future (damage) events whose probability of occurrence is known, whereas precisely this is unknown in the case of uncertainty (Chap. 1.2).

The balancing situation as such is unavoidable in law and ethics, even if this constant balancing situation outside economics is often not noticed (true therefore Francot 2014; Gawel and Bretschneider 2012; Gawel 2001; Hansjürgens and Lienhoop 2015; Alexy 1986; see also Wagner et al. 2016; misjudged e.g. by Dworkin 1977; Rawls 1971). Even if one were to set a concern absolute, one would implicitly neglect other concerns. All this can be traced back to the constitutional and ethical constellation of multipolarity of freedom. But it would be also undeniable if human rights were only contrasted on the one hand with (traditionally formulated) a “common good” on the other. In any case, such conflicts remain unavoidable. Consequently, norms such as Article 52 para. 1 CFR contain a general proportionality requirement and an option to limit human rights and therefore explicitly establish balancing (and nearly all liberal constitutions do the same, see e.g. Article 2 para. 1 of the German Constitution or the 14th amendment of the US Constitution).

The inevitability of balancing does not only apply to rare constellations or particularly dramatic problems, but is literally permanently present in every political decision, not only regarding sustainability. By permitting industrial society, authorising industrial plants, permitting car traffic, etc., politics is statistically accepting deaths with its eyes open, i.e. impairments of the right to the elementary preconditions of freedom, due to the air pollutants released, etc. This is done by balancing life and health with the freedom of consumption of all of us and with the economic freedom of consumers. This is very often called “stochastic damages”. This means statistical cases of illness and death that occur in the long term and in combination with other causes of damage in the wake of industrial society life.

Since balancing as such is inevitable, concrete decisions on sustainability (or on any other question) cannot be based on a principle of “do no harm” (*neminem laedere*) – this would simply be impossible (Gawel 2001; Lübke 2000; Winter 2001; Gawel and Bretschneider 2012; misjudged in Zucca 2008; Rawls 1971; Gough 2017, p. 57). Bizarrely, although explainable by human contradictoriness and tendency to denial (Chap. 2.4), human beings regularly deny the need for balancing and at the same time can demand completely incompatible things: e.g. “more environmental protection” and “more wealth”. It has already become clear (Chap. 3.1) that in all this an alleged contrast between deontology and consequenceism changes

little because it does not exist in this way. The idea, shared by many philosophers, that certain actions could be identified as almost always bad, therefore does not seem tenable in this unambiguousness.

The fact that the situation of constant balancing is by no means limited to sustainability issues, but occurs in general, is further illustrated here by the explosive example of medical care: Must the state increase health insurance contributions to 25% of wages in order to further optimise health protection, especially for the elderly – with the result that, for example, holiday trips become unaffordable for employees? And: Is it necessary to perform a surgery on a 90-year-old for 200,000 euros if patients die in 95% of the time – and if, alternatively, the money could save a large number of African children who live in a malaria area? (see Ekardt et al. 2012)? Under the topos of “medically necessary” services (to which every individual has a right of access; cf. e.g. Article 35 CFR), this balancing is camouflaged. On the basis of the budgets allocated to doctors by the health insurance funds, they are in fact carrying out a balancing of interests every day.

Due to its inevitability, the fair weighing of conflicting interests, which is here referred to as balancing, is ultimately the core of law and ethics. And the rules that frame this balancing procedure deliver the most precise information about inhowfar objectivity is possible in the normative sphere. The legal framework of the legislative balancing act between the various freedoms, preconditions of freedom and freedom-promoting factors is usually referred to by lawyers as the proportionality test. More theoretically, one can speak of balancing rules. Since the legislator carries out this balancing to a significant extent (the acts of parliament are the written results of the legislator’s balancing), the balancing is then largely limited for the administration to the interpretation of the norms which the legislator has created, provided that this interpretation of the norms leaves leeway or discretion. Constitutional courts review the legislative observance of the balancing rules for the legislature, which will be derived from the liberal-democratic basic principles and limit the legislator’s scope for consideration. Whether, in turn, the limits to discretion at the administrative level are kept is examined by specialised courts. For a sub-area (private law) where there is no need for state control, the fulfilment of freedom is left more to the individuals who conclude contracts with each other and only occasionally turn to a court settling disputes. This entire basic structure applies *cum grano salis* on local, regional, domestic, European, and international level in the modern world (democracy and separation of powers exist in many states only as a façade). The aim so far was to explain the term balancing. Why separation of powers is necessary in general and in the concretisation of normative sustainability, and which institutions play which role in this, is discussed in the following.

Economists usually refer to the balancing rather as economic evaluation or cost-benefit analysis and speak of efficiency or optimal conditions instead of justice. Many sociologists, political scientists and environmental scientists, on the other hand, speak of risk analysis, risk assessment or risk management (which, strictly speaking, only refers to a certain aspect of balancing, namely uncertain facts: on the role of facts see Chap. 3.7). However, it will become apparent that the cost-benefit

analysis is an unconvincing alternative to liberal-democratic balancing that is presented here in ethical and legal terms (see Chap. 3.9).

This does not deny the merits that economists deserve for clearly pointing out the need for balancing in decision-making. In philosophy (in contrast to the law), the situation is more ambivalent. Apart from utilitarianism, explicit balancing problems in philosophy often appear more as a rare situation called a “dilemma” than what they are: the constant phenomenon of every normative decision. Instead, philosophers often concentrate on questions such as whether what the individual is entitled to is to be determined absolutely or comparatively in relation to what others have. However, questions such as “do I get an absolute environmental protection level of XY or in relative terms as much as all others” do not make much sense. It brings us back to the errors of the debate about egalitarianism. The point is overlooked that we can derive balancing rules from universal principles that more clearly outline the possibilities and limits of objectivity in normative questions. In the following we will also see that therefore the claim of many ethicists to be able to give exactly one answer to normative questions (e.g. on sustainability) is not feasible. The leeway is simply too broad for that. It is not an ethicist who is called upon to fill the leeway, but democratic politicians and civil servants, for instance with regard to climate protection. This exemplifies what has already been said about the relationship between ethics and law (which makes politics binding; see Chap. 1.7).

We have seen: Balancing is inevitable in law and ethics. Regarding this, philosophers can learn from lawyers (see also Chap. 1.7). By that means, we have reached a first cornerstone of a concretised normativity of sustainability.

Institutions: Who Is Accountable for Sustainability – Public Authorities, Citizens, Companies?

Before we discuss balancing in detail, we have to discuss institutions (see also Cooper 2012; Kahl 2018; Giezen 2018). This takes us to the very important question of who in general is responsible for the realisation of sustainability: the public authorities, and if so, which ones? Or rather citizens and companies? From what has been said so far, some statements can be made about the latter questions. They are ethically and legally derived from the liberal-democratic basic principles, which gives them a broad validity. Although liberal-democratic constitutions generally refer to democracy, separation of powers and the rule of law, a fundamental perspective on responsibilities – also including citizens and companies – is lacking. What is presented in the following, is the normative counterpoint (who *has* to do something) to the descriptive analysis in Chap. 2 that showed how the interplay of the different actors of the transformation towards sustainability *de facto* works.

- In principle, all human beings, and consequently all citizens, companies, etc., are also committed to sustainability. This follows directly from the foundation of normativity in discourse ethics: Since it is based in discourse between individuals, the individuals are in charge of implementing the normative standards logically

derived from discourses (Chap. 3.1). The consequence of this is that they can be legally and ethically bound by political and legal measures, e.g. to more climate protection and more resource conservation, just as it can be said in general that everyone is required to contribute to the realisation of justice and sustainability through political pressure towards sustainability and personal behaviour. However, this cannot be made more concrete for the individual in such a way that it would be possible to derive enforceable requirements for citizens in detail – individual ethics and corporate ethics that try to provide more detailed standards will not be successful, no matter if regarding sustainability or other societal issues (see Chaps. 3.2 and 4.2).

- Consequently, it is necessary to create institutions that are concerned with the implementation of justice and specifically sustainability, if a completely voluntary coping with the normative goals is not empirically probable and could furthermore not work without sufficient concretisation.
- As a starting point, the obligation to implement justice and sustainability from the ethical and legal perspective applies equally to all institutions and levels of public authority. However, this must be specified in three respects:
 - In the following, it will become apparent that the basic principles of liberal democracy and especially freedom is followed by a need to establish and maintain various institutions, namely the legislative, executive and judicial branches. These are only bound to the extent that it results from the rules of the balance of powers, which also follow from those principles; the primary obligation to more sustainability lies with the legislature.
 - Not only a national, but also a transnational (EU and international) institutional level is needed, because only this can protect freedom effectively, especially sustainable freedom (more precisely Ekardt 2016a, §§ 6 B.-E., 7 B.). In principle, every state is obliged to act for greater sustainability; furthermore, all states and all institutions worldwide are obliged to work towards (more effective) joint – supranational or global – action. And if this does not succeed, every state is obliged to take measures that make such agreements more likely and effectively complement supranational or global action.
 - Legislative and executive branches (national and transnational) can only act to the extent that the respective constitutional law assigns them a competence. This regulates (see for instance Article 192 TFEU) which level of statehood – EU, national, regional, local – may be active in a certain policy field. The fact that there must be distinct rules at all follows (beyond the explicit legal statute) from the liberal-democratic basic principles, too (which imply predictability and legal certainty as a result of reason, impartiality and freedom). As regards Europe, both the EU and the member states generally have far-reaching responsibilities in the field of sustainability policy.
- The participatory role of NGOs or generally lobby groups accompanying the representative democratic process will be considered in the following (in more detail Ekardt 2016a, § 5 C. II. 3.). It should only be briefly mentioned here that the media also play a major role in the representative democratic process; this is also understandable from a normative point of view on the one hand, but on the

other hand, in its present form, is fraught with many problems that cannot be dealt with in detail here.

Later, it must be clarified in empirical terms how likely it is that citizens and entrepreneurs will take voluntary action and which political and legal control instruments could be effectively used by the public authorities, which also includes the clarification of the question just raised as to the respective effective shares of action, e.g. at the national, supranational and global levels (Chap. 4).

Why (Representative) Democracy – And Is It Compatible with Sustainability?

At this point, the role of democracy for the liberal-democratic basic principles and their relationship to sustainability must be deepened. From there, rules also emerge on how the balancing problem is to be dealt with.

Democracy, along with dignity, impartiality and freedom, is the core principle of a liberal basic order: Democracy is a principle of justice, universally and – combined with the arguments for global justice (Chap. 3.3) – globally (on global institutions see Chap. 4.11). For if all people are to be respected equally, they must also have an equal share in solving social conflicts. The principle of equal respect for the autonomous individual (human dignity) implies precisely that, ideally, everyone should decide for herself or himself – and consequently must have the same relation to the instance of dispute resolution – as far as a conflict exists, e.g. between different human rights (mutual limitation of freedom: Chap. 3.4), which does not resolve itself and where therefore not everyone can decide alone. But this means democracy. Democracy also ensures freedom, since politicians can be voted out of office. If reason is open in content, democracy is the obvious decision-making procedure. Democracy here means a democracy in every country if possible worldwide and also at a global political level. This does not imply mere consensus structures. At the same time, within the limits outlined above, quite different models of democracy are conceivable as compatible with freedom – for example, there may be a majority or proportional voting system, there may be a direct election of top executives or not, and so on. Such and similar variances certainly have little or no influence on the sustainability problem *prima facie*.

The point that a democracy is foremost representative (to which population participation already belongs not only via the right to vote, but also through discourses in parties, associations, neighborhoods, participation in demonstrations, public expression of opinion, etc.) has a strong justification in itself (Bussemer 2011; Steinberg 2013; Hamann 2014; see also Janis 1972; Kahl 2018; Cooper 2012; overlooked by Scheidler 2015). Rationality and freedom are best protected if the human motivational situation is taken into account which is characterised by limited rationality and often problematic group dynamics. By the same token, it is only through this derivation of democracy from the autonomy-centered discourse between individuals that the paradoxes of democracy (Murswiek 2017) can be solved, which

would otherwise make inexplicable how an apparently self-purpose “people’s rule” and the majority principle can fit together.

This is not rendered irrelevant by the fact that, historically, representative democracy has appealed to some because it keeps the mass of the population at a distance from the immediate political landscape (on the history of representation Scheidler 2015; Ekardt 2003; Steinberg 2013). Building on this, one can ask to which extent citizens should be more involved in politics, at least at the administrative level, but possibly also at the legislative level – not only, but also with regard to sustainability. However, the participatory ideal also fits in with the discursive background of liberal democracy – especially where the content of “exactly one” solution cannot be derived from the substantive standards of fundamental rights. Particularly in international decision-making processes, there has been a lack of a world parliament anyway that could embody the representative component of democracy (see Chap. 4.11). But participation does not replace representation. The universal discourse principles of reason, respect, impartiality and freedom set ethically and legally not only the “justice discourse procedure”, but also the justice of its results, which set the precondition for all further future discourses. Thus, they guarantee – transcendently founded (Chap. 3.1) – not only that justice is found in certain proceedings. Rather, they also guarantee that decisions (e.g. laws or administrative acts) also meet these criteria in terms of content and not only in the process of their realisation. Because discourse and action (= discourse procedure and discourse result) cannot be meaningfully separated in this respect – among other things because discourse results always determine the conditions of further discourses. This reminds us that sustainability cannot be reduced to a purely procedural issue.

Democracy has a vital significance for sustainability, and not only because it represents the form of government that belongs to freedom and whose long-term and global expansion is about intertemporally and globally expanding freedom. Democracy represents pluralistically different opinions. This favours discourses on meaningful problem solutions and thus opens up potentially well thought-out, balanced arguments and concepts. In this way, learning processes may also become possible that clarify the self-benefit and moral advantages of a climate and resource shift – and make at least aware of the emotional limitation in terms of sustainability (Chap. 2.4) as a problem.

Nevertheless, democracy reaches its limits when it comes to sustainability. But democracy also favours precisely this emotional restriction: in concrete terms, short-term thinking in election periods and thus the general human short-term orientation (Steinberg 2013). This is all the more true as future and distant people have not elected current governments. Those most affected are therefore neither involved in discourse nor in elections, and thus tend to be neglected. Especially in the 1980s – but sometimes still today – there was and still is debate about a need for an eco-dictatorship (Jonas 1979; critical Stengel 2011; Fücks 2013). However, this is entangled in several misunderstandings. It is true that a democratic politician who pushes for a strong sustainability policy may endanger the re-election she or he usually wants (Chap. 2.4). But with an eco-dictatorship, understood as an abolition of the democratic form of government, this problem can hardly be tackled. As

mentioned earlier, democracy is closely interlinked with freedom, reason and separation of powers – and those principles cannot be secured by abolishing it. In addition, a dictator would behave in his or her own way selfishly and be subject to conceptions of normality. And: even dictators like to appeal to instincts and emotions. However, they rarely move in the direction of sustainability, since there are almost no historical examples for primarily altruistic dictators.

Nevertheless, the debate on eco-dictatorship reminds us of what has been said before: Democracy serves to promote rationality, autonomy and self-determination; it does this by mobilising the best arguments and by mediating between the various spheres of freedom. If it serves freedom and rationality better, this can also justify the limits of democracy (and this immediately even closer to the separation of powers) – and in particular democracy means neither consensus nor the absence of laws and prohibitions. Sustainability therefore needs liberal democracy – but also vice versa, as we will see.

Closely intertwined with the question of compatibility between democracy and sustainability, which has just been answered positively, is another question: What will be the long-term view of democracy if a consistent sustainability policy leads to a post-growth society (Fücks 2013; Steinberg 1998)? It is first of all a historical experience that with the emergence of capitalist affluent societies, liberal democracy also tends to move in (Deaton 2013; Acemoglu and Robinson 2012; Fücks 2013). Of course, the industrialised countries (but not the majority of the population in the developing countries) are now so rich that one can ask oneself whether a sustainable post-growth path could seriously destabilise them by resurfacing harsh conflicts of distribution. However, one could sarcastically question the diagnosis that the idea of growth makes peaceful democracy possible in a slightly different way: Instead of wars of conquest, are the industrialised countries not today also conducting a kind of Cold War against the majority of the population in many countries of the Global South (decisively supported by the local elites) and against future generations, to whom we are imposing the consequences of climate change and the waste of resources? Either way, the whole thing remains only a limited part of history, since wealth and fossil fuels are not the sole cause of liberal democracy.

All this does not mean that democracy is – historically and currently – the most likely form of government in this world. Rather, the opposite is likely to be the case due to certain basic human tendencies (Chap. 2), such as group thinking and simple truths (on details see Ekardt 2017; on the threatening post democracy see also Crouch 2004). This frightening descriptive finding, however, does not alter the normative statements made.

Balance of Powers in a Liberal Democracy: How Important Are Parliaments, Administrative Authorities, Courts?

At this point, the problem of other institutions and the separation of powers arises. Must sustainability not be left completely to the democratic process? This raises the old question of the relationship between freedom and democracy – and between

different liberal-democratic institutions. As mentioned earlier, democracy is a necessary consequence of freedom, and freedom and democracy promote each other (see also Habermas 1992). However, a democracy based on the separation of powers between different institutions, namely legislative, executive, and judicial power, promises more freedom, rationality and impartiality than a “radical” democracy that purely relies on majorities. And this is precisely why constitutions such as the EU constitutional documents, the German Constitution or the US Constitution (and in the end all Western constitutions) are structured like that. The fact that mutual control and several levels of discourse promote the liberal principles applies particularly against the background of empirical findings on the relative irrationality of human beings, especially in group-dynamic situations (Chap. 2.4) – in the end, it’s the same arguments as in favour of representative instead of plebiscitary democracy (Hamann 2014; Steinberg 2013; Ekardt 2016a; in the end also Habermas 1992; see also Janis 1972 and Cooper 2012). And it is precisely intertemporal and global justice (and thus sustainability), i.e. the freedom of the young and those who come after us, as well as those who live far away, that speaks against radical democracy. Democracy is not an act of self-determination for future and young people living far away, but of heteronomy. For they are no participants in democracy today, and the fact that they are automatically thought of is empirically unlikely.

In precisely this sense, the separation of powers and the existence of strong constitutional courts imply that parliaments should not be omnipotent. However, this does not lead to a democracy as a counter-principle to freedom, but as a conflict solver between freedoms, which makes further conflict solvers such as courts appear to make sense. But the necessity of mutually controlling powers at every political level and the necessity for balancing raise the question of which power is responsible for concretising, for example, the degree of sustainability that is ultimately to be practiced. The answer to this follows once again from freedom: If a balancing situation shows that a large number of possible decisions are fair, the parliaments are called upon to take the decision. This is because decision-makers that can be voted out of office are the rational and freedom-friendly variant for filling a leeway that cannot be narrowed down to just one decision in normative rational terms. Parliaments must, however, move within the framework of certain balancing rules which can be derived from the fundamental rights themselves, which mark the extent of normative rationality which can be demanded of the respective decision, for instance in terms of sustainability (see also Calliess 2001, pp. 373 et seq.; Susnjar 2010, pp. 322 et seq.; Ekardt 2016a).

The institutions that are predestined to check whether these limits or balancing rules are observed are constitutional courts. But, contrary to a frequent misunderstanding, they have to control balancing limits and not weigh up different rights or goods themselves (Susnjar 2010). Controlling balancing rules includes also factual and procedural issues as we will learn later on. Here, where something is actually to be controlled, judicial control promises a gain in rationality and freedom. On the other hand, governments and administrations are predestined for the concretisation of parliamentary decisions – i.e. the laws – in individual cases,

which, on the basis of the findings on the interpretation of law (Chap. 1.7), is also an independent role associated with certain leeway, the limits of which in turn are monitored by the specialised courts. Legislation and administration can in turn react to court decisions with new laws and new administrative decisions – not only, but also with regard to sustainability.

If the balancing rules are worked out more precisely than has usually been the case so far, the balance of powers becomes clearer than before, where in the absence of a clear line constitutional courts can become very powerful. First of all, a constitutional court against a parliament must never issue “do-exactly-this” judgments, but must always limit itself to “at-least-not-like-this” judgments. A constitutional court, for example, must not say to the parliament: “Refrain from coal use in four years and 127 days”. It can, however, say: “The current phase-out is too slow; re-decide the question until XX.YY.2020, taking into account the following facts, normative issues, procedural rules and balancing rules.” Conversely, a constitutional court could rule on the complaint of an energy company: “The legislator may opt out of nuclear power generation, but it must do so gradually in order to grant protection of legitimate expectations regarding investments already made” (on the pointless attempts to make a distinction between defence and protection rights see again Susnjar 2010; Ekardt 2016a; briefly mentioned in Chap. 3.4).

Why Institutional Issues Are Sometimes Overestimated in the Sustainability Discourse

We have seen in this section from a both legal and ethical point of view: (Also) for concrete decisions on sustainability issues, balancing the different spheres of freedom is inevitable. And institutionally, we are all addressees of the commitment to sustainability, but in particular public institutions. In the interest of sustainability, these must (also) be organised in a representative-democratic manner with separation of powers. And an eco-dictatorship is not a solution. Notabene: Policy instruments, i.e. concrete measures are not meant by “institutions” – even if the term is sometimes understood sufficiently broadly (see Chap. 4; as an example for the “broad” understanding of the concept of institution see Giezen 2018).

The institutional structure of liberal democracies developed in this way appears in principle to be sufficiently efficient to deal with sustainability issues. Nevertheless, the question of whether sustainability calls for completely new institutions is sometimes raised (Cooper 2012; Kahl 2018; Giezen 2018). However, the reasons for the lack of action can only marginally be attributed to the lack of new institutions (besides the typical liberal-democratic institutions mentioned above). The problem of a lack of sustainability lies in a vicious circle between politicians, entrepreneurs and voters/ consumers, who all have a similarly low honest (!) interest in a fundamental change towards more intertemporal and global justice (Chap. 2). At first glance, it sounds convincing that new institutions – e.g. sustainability committees in parliaments – could make a difference, because, as we know since Max Weber,

institutions will often cultivate a self-interest in their topic and can therefore strengthen it. However, with regard to sustainability, the opposing “vicious circle” structures are so strong and the sustainability bodies, meetings, committees, conferences, etc. in all public and private sectors are already so numerous that a further “increase” here seems more like a distraction from the actual issues. Nevertheless, two institutional complementary fields appear relevant:

- Since sustainability issues typically demand for transnational solutions and freedom is also valid across borders, the global political level needs stronger institutions, more precisely (at least in principle) a transfer of liberal-democratic institutions to that level (Chap. 4.11).
- At all political levels, those institutions could be helpful which can assert intertemporal fundamental rights as trustees for the persons concerned. The weight of these rights also today can be quited by living plaintiffs if necessary, but those institutions could develop supplementary pressure.

To sum up: Balancing is inevitable (also) when it comes to sustainability. Furthermore, a differentiated answer to the question who is accountable with regard to sustainability can be provided. But institutional issues are sometimes overestimated. In any case, democracy is a necessary element under the auspices of of rationality, autonomy, and freedom – and there are good reasons for a focus on representative democracy. Accordingly, the idea of an ecodicatorship is by no means helpful for the sustainability discourse.

3.6 Concrete Decision-Making and Balancing: Economic Freedom Versus Sustainable Freedom – Concretising Normative Sustainability

This section will deduct which legal and ethical balancing rules apply in detail, based on the liberal-democratic principles. This basically leads to an ethical and legal idea of how much sustainability is imperative. This will later be demonstrated in detail with regard to the example of climate protection (Chap. 3.8). Those who do not elaborate on this step in detail – such as the majority of sustainability research – can actually say little about decision-making and sustainability.

Balancing Rules Define the Limits of Normative Rationality

Together with rules on institutions and their responsibilities, the balancing rules outline the scope for subjective decision-making by parliaments (also) on sustainability issues. Subjectively, this is because balancing rules reflect where the limits of the possibilities of normative rationality lie in terms of concrete decision-making. Although the balancing rules, with the normative concerns identified as

justified (freedom, its preconditions, and promoting factors), also state the reasons for decisions within the scope for weighing, they do not determine the decision there. However, the objectivity of normative rationality is also preserved within this leeway by the fact that the statements about institutions decide who has to fill it.

In the following we will see that balancing rules also include statements about the collection of facts and about the procedure of public decision-making. In the legal discourse, all these rules are often rather described in terms of the principle of the rule of law and spelled out in aspects such as the principle of proportionality, the reservation of the right to a fair hearing, the principle of the protection of legitimate expectations, or the principle of legal certainty. However, balancing rules can already be derived from the liberal-democratic basic principles, especially from freedom – and therefore legally and ethically simultaneously. The principle of the rule of law is nothing more than just another word for it (as well as for separation of powers as an institutional setting). And we will see below that it is precisely the orthodox legal balancing test – the proportionality test – that can be integrated into a somewhat larger framework.

In the discourse on international law, as already mentioned, it is sometimes assumed that there are rights that are not subject to balancing – or legal positions that can be balanced at will (Gibson 1990, Nickel 1993; Donnelly 1993; Hiskes 2009). However, as has already become clear (in Chap. 3.5), balancing is inescapable. However, the balancing rules normally do not lead to a quantified weighting of the concerns; this is considered later, both in the following – and especially in the discussion of economic approaches such as cost-benefit analysis as alternative concept of balancing (Chap. 3.9).

A List of Balancing Rules

All that has been said by now enables us to derive a list of balancing rules in liberal democracies now – on national and transnational level, in both ethical and legal terms. This list is the following, and as mentioned earlier, it is mostly a collection of rules already discussed especially in the legal discourse (in parts similar as in the following: Susnjar 2010; see for the usual legal wording – “proportionality test” – that offers the same in many points but with less clarity: Bäcker 2009; Pavcnik 2009; in parts also Calliess 2001):

1. The derivation of balancing rules from the principle of freedom is initially apparent for the first balancing rule. In the usual terminology of balancing as a proportionality test of infringements of fundamental rights it is usually dealt with under the heading “legitimate purpose”. This first rule says that the balancing material must be complete on the one hand and on the other hand must not contain any inadmissible interests. Following from the thesis justified in Chap. 3.4 (against the European and German jurisprudence, which in this respect grants almost arbitrary leeway), freedom and its preconditions and promoting factors are the only justifiable criterion of justice and the only

possible object of public regulation (but not the common good, good life and ecocentrism). As already mentioned briefly, this can also be further restricted in constitutions for single fundamental rights. But there is no balancing rule that protective rights do not exist at all or that they are only taken into consideration with lesser weight as defensive rights – insofar as one believes that protective rights can be separated from defensive rights at all (Chap. 3.4).

2. The protection of freedom and its elementary preconditions against fellow citizens does not fall out of the permissible weighing material in sustainability cases, because they frequently concern mere threats that are not completely certain. These situations of precaution do not rule out the protection of fundamental rights, as remains to be discussed separately (in Chap. 3.7). Therefore, some classic points of failure of a normative sustainability theory do not exist.
3. Furthermore, the two further balancing rules being part of the proportionality test (in international, EU, and national law) can be derived from freedom, too: first the suitability rule, according to which no part of freedom may be restricted without benefit for the freedom of anyone else (or formulated in common terminology: nothing may restrict freedom, which does not promote the legitimate purpose). Under the rubric of the suitability of a state action that protects the elementary preconditions of freedom but impairs corporate and consumer rights, it can be asked, for example, whether national climate protection measures can have any effects at all, even though climate change is a global problem. However, this objection to a sustainability policy based on human rights is not very convincing on closer inspection. This is because a legal consequence of the environmental protection of human rights can lie precisely in the fact that there is an obligation to cooperate globally. Furthermore, national measures that are potentially imitated by others are not devalued by the fact that the rest of the world is not immediately involved.
4. The next balancing rule generally recognised as part of the principle of legal proportionality is the necessity rule, according to which a reduction of freedom in favour of the interests of other participants may only go as far as is necessary to promote the freedom of other people (the mildest means of realising freedom for the other citizen may therefore only be chosen with regard to the resulting reduction in freedom for a citizen). The necessity rule, like the suitability rule, follows from the multipolar freedom principle: one must not be deprived of more freedom than is actually necessary to promote freedom in another. Here, for example, it can also be asked where, in order to strengthen sustainability, governance instruments are actually needed instead of a completely free market – and which instruments leave more leeway for the citizens, if necessary, with the same effectiveness (e.g. economic instruments instead of command-and-control law: see Chap. 4.5).
5. Appropriateness as the final step in the traditional proportionality test (which is omitted from time to time, especially by ECJ and ECtHR) can also be seen as an umbrella for a number of further balancing rules (derived below) which also follow from the principle of freedom and its multipolarity, i.e. from the fact that

there is a plurality of freedom bearers. The most important rule of this is that a concern may not obviously be set aside one-sidedly in favour of other concerns; moreover, the real degree of concern in the individual case must be considered (e.g. in Germany BVerfGE 61, 126 (134); 69, 1 et seq.). However, the problem that the impairment of freedom of different people cannot be sensibly quantified in a homogeneous unit such as money leads to the insight that only evidently one-sided balancing results can be reprimanded – inter alia with regard to that, we will see later on that cost-benefit analysis is not a suitable approach to balancing (not only) in terms of sustainability (Chap. 3.9; in detail Ekardt 2019).

6. Protecting the greater number of persons affected may also be a balancing rule, given that they are affected in the same intensity. This necessarily results from the aspect that, in the wake of multipolarity, the freedom in terms of human rights must be maximised. A situation in which the rights of more participants are safeguarded is therefore generally preferable to a situation in which this is not the case (overviewed in the broad debate on this point under major Anglo-Saxon influence; see e.g. Meyer 2006; Moellendorf 2014; Lübbe 1998; on the misleading debate “deontology versus consequentialism” see Chap. 3.1). By the way, it would otherwise not make sense to have a state vaccination obligation, which statistically also harms some people. However, unlike economists, one may never quantify incomparable concerns (see in detail Chap. 3.9). The current philosophical discussion of this point is ultimately strongly aimed at the “individual ethical” or “criminal law” perspective. If, on the other hand, one takes a “social ethics” and “public law” perspective, i.e. a perspective of justice, the possibility of counting the number of affected can hardly be rejected per se. This does not exclude the possibility that in individual cases, as regarding a total ban of torture, categorical prohibitions of balancing may be justified on the basis of the relevance to the liberal character of the basic order as a whole (in detail see Ekardt 2016a).
7. Furthermore, two competing and therefore difficult to operationalise balancing rules are the protection of legitimate expectations (e.g. BVerfG of 18/02/2009 – 1 BvR 3076/08) on the one hand – and the openness for learning processes in order to come to the best possible decisions on the other hand (for more details see Ekardt 2016a, § 5 C. II. 2.).
8. A further balancing rule that can be examined under the heading of appropriateness, but which so far hardly appears in jurisprudence, is the junktim of freedom and responsibility for consequences or the polluter pays principle, which in turn follows from the principle of freedom itself (Ekardt 2016a, § 4 C. V.; Lübbe 1998). The negative consequences (for society) of an otherwise positive action for the actor (e.g. the cheap free movement today) must at least fundamentally affect the actor, even if only by way of cost allocation for ecological damages. This polluter pays relationship is also not cancelled out by the fact that all other people or states worldwide cause greenhouse gas emissions, for example, because violations of the freedom or human rights are not rendered irrelevant by the fact that others also commit them (ILA 2014; Verheyen 2015).

9. Another obvious balancing rule, which is primarily relevant for the distributive issues, results from the need to finance the protection of the preconditions of freedom and the freedom-promoting factors as well as indirectly from the idea of performance contained in the junktim of freedom and responsibility for consequences: the principle of economic capacity. Explicitly, the principle of economic capacity is standardised e.g. in Article 13 of the French Declaration of Human and Civil Rights, but also other constitutional orders such as the German one undisputedly use it for balancing different spheres of freedom. The polluter pays principle and the principle of economic capacity can become relevant, for example, in distributional issues in the wake of solving sustainability problems such as the climate problem. As will still be seen, this can, in concrete terms, result in relatively little scope for democratic decision-makers (Chaps. 3.8 and 4.7).
10. The most important factor for reducing the scope for democratic decision-makers in the context of sustainability arises from another balancing rule, which has so far essentially been overlooked ethically and legally: As a result of freedom and its preconditions, it is obvious that the political scope for decision-making ends where political action or omission substantially endangers the free democratic system and its capacity for balancing as a whole. And this is precisely the case if no drastic steps are taken in a timely manner to solve some crucial environmental problems, especially to protect the climate; if the consequences of climate change described at the beginning of the book are to be avoided in a more or less consistent manner (Chap. 1.2), zero emissions will have to be achieved very soon. In view of the massive difficulties in reaching the goal at all, the question remains open as to whether a 1.5-degree human-rights limit is owed as in Article 2 para. 1 of the Paris Agreement or, for example, “only” a 1.8-degree limit. In any case, a maximum of efforts is required for a drastic energy and climate change. The same insight can be justified for similarly existential ecological topics, but not for environmental protection as a whole, whereby in this book empirical analysis beyond the climate topic is not done in detail where the mutatis mutandis planetary boundaries would have to lie in detail. Essential questions remain to be clarified for all such topics, not only for the climate: in particular the handling of uncertain facts (on balancing rules for facts see Chap. 3.7) and distribution issues (Chaps. 3.8 and 4.7; also Jakob and Edenhofer 2014 and Sen 2009 converge, without the theoretical foundations, with the result here that the physical foundations for different possible policies must be preserved in any case).

Strong Versus Weak Sustainability – Towards a Normative “Principle of Sustainability”?

The balancing rules draw a clear picture of what sustainability ethics and sustainability constitutional law means – including the limits to normative rationality. This

picture will be complemented by analysis on (especially uncertain) facts and distributional issues in the following chapters.

In contrast, attempts to focus everything on some kind of overarching “principle of sustainability” as such are a dead end. Although a rough definition of sustainability as intertemporal and global justice is possible (Chap. 1.5), the term in itself is too vague to be condensed to an overarching measure that tries to deliver something broader but equally powerful compared to that what was derived from freedom and its preconditions here. We have already seen (in Chap. 3.2) that this does no harm to sustainability, since human rights are legally and ethically much stronger than abstract principles. Of course, there are still objective goals such as environmental protection in general (see e.g. Article 191 TFEU) besides human rights, as a partial representation of protecting the freedom-promoting factors – and sometimes even sustainability as such is mentioned in laws. However, this leaves large discretion to political decision-makers, since sustainability as such – as mentioned above – suffers from a lack of clarity and can hardly provide an exact answer to what we are obliged. Blunt statements such as, for example, that nature cannot be outweighed in money, therefore do not arise in the present book. This is particularly evident when dealing with non-renewable resources, which can only be “saved for future generations” to a limited extent. At best an effort at substitution could be possible, although this (as the example of “bioenergy instead of oil” shows: see Ekardt 2016a, § 6 E. V. 1.; Hennig 2017; Ekardt and von Bredow 2010; OECD 2008; Haberl and Erb 2006) can again bring along its own problems. And moreover, it is precisely questionable why all resources should be distributed absolutely evenly; this can be the convincing way when dealing with the global climate sink, but a general egalitarianism cannot be justified (see Chaps. 3.4 and 4.7).

Nevertheless, some may miss the debate whether sustainability is about “strong” or about “weak” sustainability in this book. “Weak” sustainability refers to, for example, monetary increases in prosperity or increased technical knowledge may compensate for a consumption of nature “beyond the rate of renewable growth of nature”. Admittedly, if the weak sustainability with that far-reaching compensability were a permissible concept, the complete destruction of the foundations of life would possibly also be “sustainable” if only sufficient financial profit was made with it. But we do not need an abstract principle of sustainability to say that – this can also be discussed under the last balancing rule for human rights mentioned in the last section. Maybe one could say, what has been justified so far provides a kind of human right to a more or less “strong” sustainability (Ott and Döring 2004; Unnerstall 1999) in the sense of a stable climate, drinking water and food supply, possibly also some kind of ecosystems or at least natural functions, but also including absence from war and civil war, and medical care, etc.

However, *the question of how sustainability aspects of human rights overrules e.g. economic freedom, for example, remains a matter of balancing and not a question of definition – or of some abstract principle of sustainability* (that maybe follows from de facto planetary boundaries by means of an is-and-ought fallacy; on this see Chap. 1.6). In the wake of the rejection of the three-pillar model of sustainability (Chap. 1.5), such balancing challenges are by the way not a question “within”

sustainability, but a weighing between different concerns – put in a nutshell: sustainable freedom versus other spheres of freedom.

3.7 Uncertainty and Risk: Facts and Sustainability Ethics and Law

There is still one very important aspect of balancing and its rules to be discussed. Environmental human-rights guarantees can only produce substantive guarantees, such as the drastic emission reductions that have just been derived, if one assumes a sufficiently clear factual situation, e.g. with regard to anthropogenic climate change. Otherwise, the degree of concrete human rights involvement could not be accurately determined. If there were no climate change, human rights would not result in any relevant commitment to climate protection. Further relevant sustainability facts are questions of the effectiveness of instruments, of economic consequences, and of the conditions for a transformation towards sustainability. All of these facts can become relevant for balancing different spheres of freedom with regard to sustainability, because without these facts, the degree of impairment of freedom in a given situation could not be assessed. However, the facts concerning sustainability issues are often characterised by uncertainty (see Chap. 1.2 and Beck 1986; Scholz 2011; Ekardt 2016a). Therefore, balancing rules are derived for determining facts – and for dealing with uncertainty, i.e. precautionary issues – from liberal principles, especially freedom. In particular, we will see that freedom based on human rights contains a precautionary component. For the underlying epistemological rejection of constructivism and for an explanation of the crucial (non-identical) distinctions of objective versus subjective and of is versus ought, reference is made to the earlier analysis (Chap. 1.6). In any case, deriving rules for dealing with facts provides further insights in the scope of objectivity with regard to normativity – and of sustainability ethics and law.

Facts and Liberal Democracy

The debate on special balancing rules for fact-finding has been underway in international, EU and domestic law for some time, albeit without any reference to sustainability (see e.g. in Germany BVerfGE 50, 290; Meßerschmidt 2000; Ekardt 2016a, b, § 5 C. II. 2.). Internationally, the debate directly on climate issues has recently focused relatively concretely on the question of rules of evidence in cases of uncertain facts (Knox 2009a; Knox 2009b; Skillington 2012; Global Initiative 2015; Dudai 2009; Cameron 2010; Donnelly 1993 – often referring to OHCHR 2009, 2013, 2014, 2015). Normally, rules for dealing with facts are not discussed as separate balancing rules; they are – once again – seen as sub-aspect of the single steps of the proportionality test. For the sake of more clarity, they will be discussed as separate rules in the following.

The basic rule for the handling of facts in liberal democracies – which find their justification in the idea of objectivity and rationality (Chap. 3.1) – is pretty obvious. It says that the factual assumptions underlying the balancing as subsumption material must be correct; otherwise the door would be open to arbitrary decisions, which would not be compatible with the idea of objectivity and rationality, with human rights, with the separation of powers, or with legal certainty as formal safeguards of human freedom. What is essential here is that, although facts are subsumption material for determining the degree of impairment of a concern, factual statements as such do not say anything normative: the factual danger of climate change does not logically state a norm that climate change must be prevented (Chap. 1.6). The decision within the framework of the balancing rules thus always remains a political-democratic one and the determination and application of the balancing rules a legal or ethical and not a natural scientific decision.

Nevertheless, facts remain facts and not norms, and the question of objectivity arises for both facts and norms (Chap. 1.6). This is the case even though this is typically overlooked in the legal discourse (see as an example from German jurisdiction BVerfGE 61, 82 (111); 88, 40 (56); 103, 142 et seq.).

Uncertainties, Precautionary Principle, Human Rights, and Misunderstandings

However, factual statements are often uncertain at both legislative and administrative level, especially with regard to sustainability, as mentioned above for several times. This uncertainty may consist in the aspect that some impending future damage only occurs when cumulative factors come into play, that it may not even occur at all or that it may not even be known whether it can occur at all, that certain ecosystemic details and long-term processes are not known, that expected technical innovations cannot be assessed, that the effectiveness of policy instruments never chosen before remains unclear in detail etc. All this applies all the more to global, long-term and multifactor phenomena such as climate change. In legal terms, measures taken in the face of such long-term, cumulative or uncertain events are referred to as precautionary (see in detail Read and O’Riordan 2017; Ekardt 2016a; Sands and Peel 2018; Calliess 2001; Arndt 2009; critical Miller and Engemann 2018). The legal and ethical answer to this problem is the precautionary principle in domestic, EU and international law which is mentioned or implied in various acts of environmental law. EU constitutional law e.g. mentions the precautionary principle in Article 191 TFEU as a core principle. This principle means, therefore, that sustainability policy must also address the problems described above: cumulative factors, time lag, uncertainty (Maurmann 2008; Read and O’Riordan 2017; Arndt 2009; Calliess 2001). Contrary to the way it is often described, precaution does not mean that nobody is to be harmed per se; *for even if long-term, cumulative or yet unknown damage is included in environmental protection policies, the possibility of balancing competing spheres of freedom (of course) remains.*

A precautionary constellation creates leeway for legislation and administration, since if the factual situation (as in the case of long-term, cumulative or even uncertain events) is inevitably unclear, the democratically better legitimised body has the decision-making prerogative – and this is the parliament or an administrative authorities, not the courts. But even then, requirements apply to the way in which the facts are obtained, for example that the information must be obtained, for example, in a balanced manner, that the available material must be evaluated exhaustively, that experts must be consulted with and that various authorities and parties concerned must be heard, and that there are requirements for justification – with the same justification as that for the factual basis of decisions to be correct at all. With regard to climate change, various uncertainties, not only of a natural scientific kind, but also with regard to economic interrelations or the precise impact of various governance instruments, can thus provide the decision-making bodies with considerable leeway. The message of the precautionary principle is that uncertainty as such must not lead to inaction. Moreover, this principle entitles legislature and administration to take measures even in these situations.

The relationship between the precautionary principle and environmental human rights is often unclear. Contrary to e.g. the popular German opinion, a human-rights claim to precaution is to be affirmed (BVerfGE 49, 89 (140 et seq.); 53, 30 (57); 56, 54) in accordance with the ECJ (ECJ, Case C 59/ 89, ECR 1991, I-2607 et seq.; ECJ, Case T 13/ 99, ECR 2002, II-3305 et seq.). Thus, human rights in the context of environmental protection do not fall out of the permissible material for consideration even though they frequently concern uncertain threats to fundamental rights. There is no doubt that future climate change developments per se cannot be predicted precisely and are therefore “uncertain”. Nevertheless, the exclusion of such precautionary cases from the fundamental rights is not convincing, at least in the case of life and health, and the danger of irreversibility of the damage, even if German jurisprudence, unlike European jurisprudence, usually declares precautionary cases to be unenforceable. Otherwise, fundamental rights would not provide what juridified fundamental rights are supposed to: to guarantee protection of autonomy exactly at the point where autonomy is threatened to be impaired. This is also supported by the fact that hazard prevention with regard to concrete expected damage and precautionary measures cannot be separated in a meaningful way. Rather, prevention and precaution represent a sliding continuum (see in detail Böhm 1996; Ekardt 2016a). By the way, fundamental rights apply not only to average people, but also to the more vulnerable, such as children, the elderly people and pregnant women, even if courts often ignore this when discussing environmental encroachments of human rights but take the average healthy 40-year old man as a basis (Böhm 1996; Ekardt 2016a). This is obviously highly relevant to climate change, since its threats such as heat waves are especially dangerous for vulnerable groups such as elderly and pregnant women.

In the case of uncertain facts, as it is with regard to some details of climate change, there is a precautionary obligation to make preliminary decisions and to review and, if necessary, rectify them later on. Such monitoring and rectification obligations are already familiar e.g. from German jurisprudence, but they are little

contoured in environmental protection and are never specifically demanded (BVerfGE 24, 119 et seq.; 3, 303 et seq.; 39, 1 et seq.; 39, 160 et seq.; 53, 30; 77, 170 et seq.; see also Meßerschmidt 2000; Susnjar 2010; Calliess 2001; Sands and Peel 2018).

A special question of the human-rights-based precautionary principle is that of the rules of evidence (more precisely Susnjar 2010; Calliess 2001; Arndt 2009; Ekardt 2016a, § 5 C. II. 2.), i.e. the question of who is to bear the burden of uncertainties in case of doubt. The overall balancing situation calls for rules on the distribution of the burden of proof, including obligations to cooperate and share information, etc., because at least the substantiated suspicion must be verifiable. Contrary to an opinion traditionally held (Miller and Engemann 2018), there can be no unilateral distribution of the burden of proof in favour of fundamental economic rights. Rather, because in environmental protection and especially climate protection constellations there are human rights on both sides and thus the classical argument for a burden of proof to the detriment of public authority is dropped, the distribution is fundamentally “open”, but care must be taken to ensure a balanced interplay between the burden of proof and the possibility to deliver the required data. Anyway, neither a classic liberal optimism about progress nor the “heuristic of fear” (proposed by Jonas 1979), according to which, in case of doubt, the “worst case” is to be assumed, can work. According to the latter, entrepreneurial activities should only be permitted if their harmlessness has been proven, although such strict proof is never feasible for damage prognoses. This is because hypothetical events can never be strictly excluded, which would consequently take us to prohibiting literally everything, or at least any form of industrial activity (BVerfGE 49, 89 et seq.; Calliess 2001; Ekardt 2016a; Miller and Engemann 2018). In addition, the dubious principle of *neminem laedere* (Chap. 3.5) would otherwise come into play again.

To sum up: The precautionary principle makes it clear that full proof of all the details e.g. on climate change and climate policy is not necessary in order to become politically active – there is even an obligation to do so (Verheyen 2006; Verheyen 2015; Boyle 2012; Dudai 2009; Ekardt 2016a; Read and O’Riordan 2017). And the obligation finds its basis also in human rights. Generally, rules for dealing with facts in a liberal-democratic normativity follow the overall idea of objectivity and rationality.

The Core of Sustainability Ethics and Sustainability Constitution

After all, the newly interpreted concept of freedom from the perspectives of ethics and law, the balancing rules, and the insights regarding institutions enable us to sum up what we can say about sustainability and normativity. However, this normativity of sustainability has little to do with what is otherwise often talked about rather spontaneously and with little foundation.

The basis is first of all the exact derivation of why normative questions can be answered objectively at all. For this purpose, a new kind of rational universalism had to be developed as the basis of ethics and law (which also includes an analysis

of the relationship between ethics and law and various epistemological considerations: see Chaps. 1.6, 1.7, and 3.1). Without this basis, any sustainability ethics is pointless. Furthermore, it was shown that the concrete content of a normativity of sustainability must be legally determined and that ethics thus runs in parallel – albeit in a completely new legal interpretation compared with the mainstream. The substance of a sustainability-oriented normativity is what we can say about the protection of freedom and its elementary preconditions – intertemporally and globally. References to social distributive justice, good life and ecocentric ethics, on the other hand, are of little help. Concrete normative statements on sustainability – and the limits of such statements – result from the derived balancing rules. These rules also include rules on factual issues and institutions. Further normative demands find no basis in ethics and law; they would thus simply be a political programme such as the SDGs. However, we will see in the next chapter that this supposedly modest programme can produce very far-reaching commitments to sustainability – and at the same time better safeguard them than the relatively arbitrary postulates that are so popular with regard to sustainability. All the more, attempts to derive some kind of individual and corporate ethics (not only) with regard to sustainability take us nowhere (see Chaps. 3.2 and 4.2).

These principles express what human beings owe each other as rational beings, mediated by the public authorities, in order to make their coexistence sustainable. Sustainability thus implies radical autonomy – an autonomy, however, that is just as aware of its radicality as of its limitation in the autonomy of all others, even if they are far away in space or time. The liberal basic principles – human dignity and impartiality – support this system ethically and legally as an expression of reason, but they contribute nothing to the resolution of individual disputes (Chap. 3.2).

3.8 Example: Strong Climate Protection Obligation – Despite Non-egalitarianism and Discretion of Political Majorities

The ethical and legal (national and transnational) balancing theory presented in this book will be further tested in the following. This will show how much sustainability is ethically and legally called for in concrete terms. The main example is climate change. Notabene, climate change – as it is mainly based on emissions from fossil fuels and livestock – is intensively interwoven with other sustainability issues such as biodiversity loss, disturbed nitrogen cycles, water pollution, soil degradation, and public health issues (Chap. 1.2). Therefore, a strict obligation to climate change will be the biggest part of an overall solution for addressing various sustainability challenges. Furthermore, the structure of the arguments presented in the following applies analogously to resource issues in general, with restrictions still to be made.

In the Anglo-Saxon debate, the topic takes up some space, even if in the prominent voices, it is not quite convincing. Shue (2014; see also Lyster 2013) e.g. wrongly assumes an alleged absolute protection of human rights (and gives little ethical justification for such rights), but expresses freedom and justice in general as

protection against imminent danger as well as the necessary precautions and emissions budgeting, just as in principle the necessary compensations for developing countries. Jamieson (2014), for example, provides only a classic critique of climate economics, including issues of distribution (more precise on that: Chap. 3.9). Moellendorf (2014) presents dubious considerations of a collective right to sustainable development without any obligations of developing countries, as well as a rather classic critique of climate economics; but the dignity foundation of human rights that he assumes is in line with the present position (for an overview of the political debate see Vieweg et al. 2014; as utilitarianist partly similar to Singer 2009).

Concrete Obligations with Regard to Climate Change

On the basis of the insights gained so far, it can be shown in concrete terms how much sustainability is necessary despite all leeway. This takes us to the following points (with similar intentions, but almost without deriving any details precisely from the liberal-democratic foundations, Kotzé 2014 and Verheyen 2006).

1. Generally speaking, the elementary protection of freedom is also subject to balancing e.g. with economic freedom, and indeed, even with strict greenhouse gas reduction targets, deaths and considerable damage are still likely. Nevertheless, greenhouse gas reduction targets towards zero emissions in industrialised countries are required in a short period of time (Chap. 1.2). This is because otherwise the system of balancing as such threatens to collapse – and liberal democracy as such must not be jeopardised by the loss of its physical basis (Chap. 3.6). In particular, precautionary protection of human rights (Chap. 3.7) also requires us to start from the most recent and at the same time also from the rather cautious, pessimistic scientific forecasts on climate change, especially if we take into account the weight of the threatening damage. In this respect, there is a need for a precautionary protection of fundamental rights that is oriented at least to the 1.5-degree limit and, in this respect, to studies that show a maximum (global) path of two decades to zero emissions (see Chap. 1.2 above). In particular, the drastic reduction of greenhouse gas emissions must not be aimed for with a relatively low probability of being achieved. This would mean, conversely, that fundamental rights damage must be expected with a substantial probability. Precautionary protection of fundamental rights and the consideration of Article 2 para. 1 PA (see Chap. 1.2) thus lead to roughly the same result. Despite all the scope for balancing, a strict climate protection obligation can thus be justified, both nationally and transnationally, both ethically and legally. In addition, further balancing rules can be identified as violated by the current practice of unsustainability, albeit this is also illustrated here primarily taking the climate example:

2. The current climate policy disregards the balancing rule that decisions must be based on facts that have been elaborated upon as carefully as possible: By now, the natural scientific facts have not yet been correctly taken as a basis either: In this respect, the legislator would no longer be allowed to proceed from the false (Chap. 1.2) factual assumptions made in the political “Brussels” etc., which only lead to reduction targets of 80% by 2050, etc. Furthermore, the measures taken so far – regardless of all their details (Chap. 4) – are clearly mistaken for being suitable for avoiding the threat of drastic damage caused by climate change. The leeway allows policymakers to choose between different climate protection instruments, but the instruments must have a real and not just a symbolic effect.
3. Furthermore, national and transnational climate policy has so far not based its decisions on the aspect that human rights freedom also has an intertemporal and global cross-border dimension and that, accordingly, legal positions of future generations and the proverbial Bangladeshi must also be taken into account in parliamentary or legal decisions. In doing so, it violated the balancing rule regarding the completeness of the balancing material.
4. The right to the elementary preconditions of freedom includes both a basic access to energy and a stability of the global climate that can at least be maintained to some extent. In this respect, the human rights reference also makes clear what is already inherent in the precautionary principle: the greater the threat of damage in the event of occurrence, the more far-reaching the protection offered has to be. Current climate policy does not follow this balancing rule.
5. A rule can also be derived from various balancing rules can be called the rule of “exceptional equality”, which is violated by the current practice of high per-capita emissions in the industrialised countries (in roughly this direction also Moellendorf 2002 and Jamieson 2014; too much egalitarianism-oriented Ott and Döring 2004, pp. 86 et seq.; Dietrich 2001; Sen 2009). In contrast to equality of rights, equality of distribution is actually neither a human rights imperative nor a liberal-democratic basic imperative, because the considerable scope of the balancing rules cannot be used to derive such a specified obligation for the legislature (Chap. 3.4). Nevertheless, in the case of climate change, the idea that (roughly) an equal global per-capita distribution of emissions at a low level is convincing from a human rights perspective. Because greenhouse gas emissions must be massively reduced in the foreseeable future if the system of freedom as a whole is not to be jeopardised, and at the same time every human being is at least temporarily dependent on emitting at least a small amount of greenhouse gases (and in the long term this can only be avoided in the sense of Article 2 para. 1 of the Paris Agreement by achieving negative emissions e.g. from afforestation). Just as important as this derivation from the preconditions of freedom and from the protection of the fundamentals of liberal democracy seems to be a derivation from the junktim of freedom and responsibility for consequences: In the case of a public good such as the climate, no one can claim that she or he has performed a “service” in the exercise of her or his freedom to produce this good.

Admittedly, since zero emissions are necessary, the per-capita approach to the necessary emission reductions is only of limited use at first glance. However, it is also necessary to answer the distributional question of who has to bear how much of the financial burden and to which extent for emission avoidance in the Global South, for adaptation to climate change that will not be completely avoided, and for loss and damage to climate change that has already occurred. The entire argumentation above leads first of all to the duty of mitigation worldwide and also of adaptation, which is precisely intended to prevent danger to the elementary preconditions of human freedom and the foundations of liberal democracy. Regarding the costs of mitigation and adaptation (as well as loss and damage) worldwide, there are two rules for balancing, despite the leeway concerning details resulting inter alia from factual uncertainties: the junktim (also known as polluter pays principle) and the principle of economic capacity (Chap. 3.6). These two balancing rules make it clear that the industrialised countries, taking into account their high per-capita emissions, need to shoulder a heavy burden of international climate policy. Politics has clearly not done justice to the polluter-pays principle, because the main victims, namely future generations and people in developing countries, are not the main perpetrators, yet they are also not compensated in any way. Another problem is the ongoing shift of emissions to the Global South (Chap. 1.2). A connecting factor in international law besides human rights, which combines the junktim and economic capacity, is the principle of common but differentiated responsibility (CBDR; more specifically Exner 2016; Honkonen 2009; Pauw et al. 2014) between industrialised countries on the one hand and developing and newly industrialising countries on the other (Artt. 3 para. 1, 4 para. 1 UNFCCC, moreover Principle 7 Rio Declaration). This is supported by the aspect that the countries of the Global South are entitled to combat existing poverty through economic development (Art. 3 UNFCCC) in the sense of the elementary preconditions of freedom.

The argumentation in favour of equal distribution and strict reduction targets to defend the foundations of liberal democracies is just as convincing for vital scarce resources such as phosphorus (Bleischwitz et al. 2012), but not for all environmental problems. At first glance, one could think of taking into account geographical conditions, already existing energy supply and the economic structure of the individual countries. But the necessary criteria would be difficult to develop and would entail an enormous bureaucratic effort. How can the advantages and disadvantages of different geographical areas be accurately and conclusively weighed against each other, e.g. with regard to balancing issues like "heating in Norway versus air conditioning in the Congo"? But even with regard to climate protection, many details remain open in terms of exact calculations for financing mitigation in other countries, adaptation, and loss and damage, as mentioned above. This will be discussed in more detail especially with regard to the polluter-pays principle in the following.

How Drastically Industrialised Countries Must Change in Light of Capability and the Polluter Pays Principle

The per-capita approach, the polluter pays principle also with regard to historical emissions, and the economic capacity combined give an impression of what a Western country would have to spend on reductions in other states and adaptation, despite all remaining political leeway. The global emissions budget remaining to keep the 1.5- or 1.5–1.8-degrees temperature limit under the auspices of the per-capita principle, the historical emissions, and the economic capacity of Western countries require not only the above-mentioned zero emissions in about two decades. Moreover, even the – illegal – 2-degrees target combined with the Gross National Product (GNP), population, and historical responsibility for the emissions only since 1990 would imply a mathematical emission reduction of 162% e.g. in Germany (a detailed calculation is provided by Ekardt et al. 2015a, pp. 6 et seq.; similar Gough 2017, p. 100; Ekardt et al. 2015b, pp. 7 et seq.; vague Meyer and Rosen 2006; the Greenhouse Development Rights approach by Kartha et al. 2007 forces a partly similar perspective; but a freedom-centered approach is incompatible with its orientation to collective development). Given the 1.5-degrees target, it would obviously be even more. Depending on the exact estimate of the mitigation costs, this alone results in a high annual two-digit billion financial transfer to contribute to emissions mitigation elsewhere plus roughly similar expenses for adaptation (and possibly loss and damage) for a country like Germany.

Notabene, neither the equilibrium between capacity and polluter pays principle (although it seems plausible) nor the exact determination of capacity can be ethically and legally substantiated in a way that exactly one result would be convincing in the end. Consequently, a number like 162% – or a more ambitious one – cannot represent an exact figure. Therefore, there is a certain amount of political leeway in the distribution of costs. In the model quoted above (by Ekardt et al. 2015a), capacity is determined on the basis of the Gross Domestic Product (GDP), taking into account remaining growth effects, whereby low-income earners are not included in the calculation. Anyway, in the choice of parameters, which above all determines the level of financial support for mitigation, adaptation and loss and damage, one should always bear in mind that some industrialised countries have simply shifted their emission problems to emerging and developing countries. In any case, an obligation to reduce more than 100% of emissions implies translating the surplus into financial support for efforts in the Global South (see also Peters et al. 2011; on the problematic alternative of strengthening negative emission technologies – except for wetland management etc. – see Chap. 1.3).

This slight vagueness also affects the polluter pays principle. Carbon dioxide emissions remain in the atmosphere for decades or even centuries and still continue contributing to global warming. But historical emissions can probably only be taken into account from around 1980 or 1990; the calculation quoted above is based on 1990. Of course, isolated, but not further perceived voices already in the nineteenth century warned of the consequences of hugely raised emissions (see Schellnhuber 2015). In 1980 on the other hand, the issue was still not one discussed by the general

public, but nevertheless one that some experts were thinking about (vague Ott 2011). Consequently, the climate-damaging nature of greenhouse gas emissions was not known, or not precisely known, until around 1980, or in more details in 1990, and also, any known legal system or ethic excludes liability for damage which could not have possibly been anticipated by those involved. This is convincing, given the justice approach based on freedom and preconditions for freedom (Chap. 3). We are not our great-grandparents, and we are not easily held responsible for their lifestyle. It is not easy to say that the industrialised countries enjoyed precisely the “advantage” in the amount of greenhouse gas already released. Also, countries such as China and India, for their part, benefit from these advantages, because they can now achieve an acceptable level of prosperity comparatively quickly by importing the economic forms and technologies developed in the industrialised countries. In addition, general poverty in the Global South is not only the result of external factors such as colonialism or unfair world trade structures. There are also internal causes such as corrupt regimes, lack of democratic control, other forms of social organisation, etc. (Jamieson 2014; Schellnhuber 2015; Sen 1999).

Lawsuits for More Climate Protection – And Are We Talking About Legislation or Single Coal-Fired Power Plants?

Since climate change and other sustainability issues such as e.g. biodiversity loss are global problems, all public authorities and in particular the national and transnational legislative bodies are in principle responsible for putting an end to the infringements of balancing rules that have been established and for initiating a different use of climate and resources; and citizens and companies are obliged to accept this and, if necessary, create a corresponding public authority (see in detail Chap. 3.5). “All legislative bodies” means, of course, that each country, for example, must ensure domestic action as well as participate in global agreements, since global issues such as climate change require global action (also due to problems of collective goods: Chap. 2.4). It is by no means the case that a purely national or European approach can be rejected as supposedly futile by the respective national legislators. There is still the possibility, for example, of successively having an ambitious EU climate policy which has a global effect if combined with border adjustments, as we will discuss later (in Chaps. 4.6, 4.7, and 4.8).

In procedural terms, these results mean that a national or transnational constitutional court such as the German Federal Constitutional Court (based on the German Constitution), the ECJ (based on the CFR) or the ECtHR (based on the ECHR) would have to make a fundamental judgment on the basis of a corresponding complaint to the effect that there is an obligation to conduct a much more intensive climate policy – and to put an end to violations of balancing rules within a period to be determined (for more details see Ekardt 2016a). Due to the human rights basis of the argumentation, all this applies not only to Europe, but also to other nation states and ultimately to the international community as a whole, based on their obligations in regard to human rights. However, in the absence of an international human rights

court, there is no instance to which a concrete complaint could be addressed on global level. The ICCPR and, more recently, the ICESCR provide for the possibility of appealing to the committees of those treaties. However, this does not lead to a judicial conviction and therefore hardly guarantees effective procedural human rights protection.

Indirectly, nevertheless, the statements made above are just as relevant for the WTO dispute settlement bodies, for example, before which no new climate policy can be enforced (due to a lack of corresponding competence), but before which domestic measures could be defended against the accusation of affecting global free trade (Chap. 4.11). Ethically and legally, it can also be said that human rights are an obligation to create effective worldwide human rights protection. If one follows the developed position, each individual, legally perhaps also those outside the respective state, could be a possible plaintiff. So far, there is no regulation that clearly states an international institution that can represent future generations and their interests before a court (since they, naturally, cannot appear before a court themselves), while harm to them could still be meaningfully prevented. In this respect, it might be obvious to recognise an auxiliary statute for proceedings in such a way that those living today are given the opportunity to appeal to the courts at least with the concern that the legislature should be obliged to create a corresponding statute for proceedings.

In all this, it must be borne in mind that an effective climate policy – and sustainability in general – is ultimately less about the prevention of individual installations and plants than about an overall different approach; in principle, it is up to the legislator how it achieves the climate-policy goals derived from the balancing rules. This does not, however, argue against considering such measures, which do not fit into the framework of the balancing rules, to be contrary to fundamental rights. And even if one does not follow this, at least when it comes to expropriations, e.g. in favour of lignite mines (or similar measures), the problem would arise that expropriation could only be permitted under very strict conditions.

A currently much-discussed first instance judgment from The Hague in the Netherlands clearly falls short of the structure with procedural rules and balancing rules derived above (*cum grano salis*, the following can be applied to other similar judgments of lower courts in the USA, Pakistan, and other countries). There, after a long, not always very clear justification, the Dutch government was obliged to actually meet its originally self-chosen – not very ambitious – greenhouse gas reduction targets and not to relativise them even more (The Hague District Court, judgment of 24.06.2015, C/ 09/ 456689 / HA ZA 13-1396). The protection of human rights for life and health (here taken from Articles 2 and 8 ECHR) is rightly referred to there. However, questions of multipolarity, intertemporal and cross-border human rights effects, concrete balancing rules, adequate commenting on imminent emission shifts, etc. are largely overlooked in favour of a kind of free judicial balancing (instead of, as marked above, controlling the legislative balancing according to balancing rules), which argues with vague *topoi* in a rather decisionist way. In contrast, it was already discussed (in Chap. 3.5) what a reasonable judgment in terms of sustainability would have to look like.

To sum up: Despite all leeway, there are strong legal and ethical obligations in favour of more sustainability – and especially of more climate protection – on the basis of the system of balancing rules. In particular, the liberal-democratic system is not entitled to endanger the vital basis of its very existence. All of this can also be brought before the courts on various political levels.

3.9 Normative Sustainability Beyond Cost-Benefit Analysis and Risk Theory – The Example of Climate Economics

So far, we have developed a detailed concept of sustainability and normativity – ethically and legally. This also included an analysis of the limits of normative rationality, spelled out in the balancing rules. Nevertheless, very concrete commitments to sustainability proved possible – especially for climate change. Now, the announced critical analysis of a competing theory of balancing public, academic and political influence is still pending: the cost-benefit analysis. The criticism of cost-benefit analysis addresses its philosophical basis, its problems of appliance and its relation to the liberal-democratic law – but not the typically stressed points “homo oeconomicus” and “balancing”, as we will see.

What Is Cost-Benefit Analysis? Why the Common Objections Are Wrong (Criticising the Balancing and the Homo Oeconomicus)

In the following, the economic cost-benefit analysis or economic evaluation is discussed (in more detail – including various terminologies – Ekardt 2019; Ekardt and Hennig 2015; on the debate in general also – and mostly more optimistic, but without discussing some crucial points of the following criticism except from problems of application – Hansjürgens and Lienhoop 2015; Brent 2017; Nordhaus 2008; Lumer 2000; Anderson et al. 2015; Pearce et al. 2006; Hanley and Barbier 2009; Hausman 2012; see also Becker 1993 and Posner 1986; in parts critical Sen 1999). In the discourse on environmental law and in US environmental policy, one sometimes speaks of the risk-based approach (Löfstedt 2014). Such approaches are known to be paradigmatic for quantifying and formalised concepts, which economists and natural scientists often regard as the only possible form of “knowledge” and “scientific worldview” (Grafakos et al. 2010; very differentiated, however, Schwerd 2008). The intention is obvious: making public decisions more rational and objective by making everything countable. And “clear figures” are also a kind of popular in politics and in the media.

Cost-benefit analysis is a quantitative empiricist ethics that considers the sum of the de facto preferences of the consumers as right. It does so through monetising and netting of all tangible advantages and disadvantages of measures or omissions in a certain area, e.g. climate policy in general (or with regard to a particular climate-political decision, for instance the permission of a new coal power plant). The

empiricist epistemology that only accepts facts – namely countable and reproducible facts – as scientific has already been criticised in general with regard to the experimental methodology, the exaggerated work with quantified aggregations of facts. In addition, we have seen (in Chap. 3.1) that cost-benefit analysis is a normative approach – in contrast to what its followers pretend by calling their results “efficient” or “optimal” and not right or just. Furthermore, we have shown that the philosophical foundations of economic empirical ethics or cost-benefit analysis are untenable, *inter alia* because it contains some severe logical fallacies (Chap. 3.1). In contrast, a tenable normative framework for liberal democracy in general and for sustainability in particular was developed (Chaps. 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7).

Beyond the problematic foundation of cost-benefit analysis, its problems of appliance such as quantification, discounting, assuming certain facts, adhering to an implicit growth paradigm, etc. must be discussed now (as well as its relation to the law). However, the best-known objections against cost-benefit analysis are not among the convincing arguments against this approach (see in detail Ekardt 2019). The first typical criticism is that of the *homo oeconomicus*. Yet, *homo oeconomicus* – that assumes the purely selfish and constantly consciously calculating human being – is not a normative theory, but an anthropology, albeit a crooked one (for a more differentiated descriptive behavioural theory see Chap. 2). *Homo oeconomicus* describes human behaviour (albeit incorrectly: Chap. 2.4), cost-benefit analysis prescribes normatively what is optimal respectively right. The one has nothing to do with the other, even if friends and critics do not notice it, because they (like almost all empiricists) cannot distinguish between descriptive explanations of behaviour and normative justifications of behaviour. Equally not convincing is the second typical criticism of the cost-benefit analysis, which is directed against its permanent openness to consideration (unconvincingly on that e.g. Dworkin 2006). For it is precisely this openness for weighing that is inevitable for any ethical or legal approach (Chap. 3.5; see also Ekardt 2019 on further wrong objections against cost-benefit analysis).

Moreover, we have to address – besides philosophical objections (see above) – some questions of appliance and of the relation to the law. The following criticism of the cost-benefit analysis is at the same time the basis for making a proposal at the end with regard to what can despite all still be useful of that approach. Climate change is chosen as an example here, since it also served as an example for my own balancing theory (in Chap. 3.8). In contrast to the legal or ethical balancing theory proposed before, the cost-benefit analysis does not only aim to mark the limits of normative rationality and to draw a framework for the political decision-making instances on the basis of this. Rather, the cost-benefit analysis aims from the outset at precisely one concrete recommendation as to how much climate protection, water protection, resource protection, etc. should be pursued politically. This is made possible by transforming any preference or concern into a monetarised value, so that the right policy can apparently be “calculated”. On closer inspection, however, this undertaking turns out to be an overestimation of the possibilities of rationality (it should be remembered that “rationality” in this book does not mean the rationality of the economic mainstream reduced to empiricism: see Chap. 1.3).

Cost-Benefit Analysis: Philosophically Untenable and Incompatible with Liberal-Democratic Constitutions

The first problem with cost-benefit analysis, as said before, is that the empiricist basis in terms of ethics is untenable. The inherent scepticism, which declares normative questions to be merely subjective and not rationally determinable (and therefore only wishes to validate factual preferences), was refuted above (Chap. 3.1). Furthermore, the underlying empiricist epistemology is unconvincing, as said before (Chaps. 1.6 and 3.1).

The existence of a binding legal order (including balancing decisions) leads to a second argument against cost-benefit analysis (just as the philosophical issue, not discussed by Anderson et al. 2015; Pearce et al. 2006; Hanley and Barbier 2009; Hansjürgens and Lienhoop 2015; Brent 2017; Nordhaus 2008; Hausman 2012). The problem in this respect is that they partly contradict the constitutional framework of liberal democracies such as the EU. The constitutional framework analysed above (in Chaps. 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7) – be it in the EU, in Germany, in other nation states or in parts even in international law – is rooted in certain rights, whereby freedoms, preconditions for freedom and conditions conducive to freedom are represented in the core. The framework also consists of regulations for parliaments, authorities, courts, etc., which further develop these human rights and resolve conflicts between different spheres of freedom by means of liberal-democratic institutions. In addition to balancing rules (including fact-finding rules), which provide a framework for balancing spheres of freedom, there are also clear procedural rules on who has to decide how such conflicts should be decided. Political decisions within the constitutional framework are based on these rules and not on preferences or willingness and ability to pay, as is the case with the cost-benefit analysis. The weight of the rights therefore does not depend on how much someone can pay and whether he or she demands his or her freedom and its preconditions particularly loudly (even if one can of course waive the exercise of one's own rights). Freedom in liberal democracy is not only the freedom of wealthy consumers with their preferences, but also the freedom of Bangladeshis and future generations, both of whom are hardly present on the free market today due to a lack of purchasing power and who will suffer massively from the consequences of damaged ecosystems (Sunstein 2009; Ekardt 2019). That does not mean that liberal democracies rule out any quantification (e.g. of victims of concurring political options), but quantification does not necessarily mean monetisation (Chap. 3.6).

In addition, there are good reasons why decision-making in liberal democracies is representative and democratic and generally not plebiscitary (Chap. 3.5). Cost-benefit analysis also collides with this since it focuses on the *de facto* opinions of citizens (better-to-say consumers) in a single situation.

Also for good reasons, achieved in centuries of historical experience, modern law claims a monopoly of the decision of normative questions for itself, with the only possible exception for other decision-making procedures, such as the free

play of forces (Chap. 3.5), where this is permitted by law. Cost-benefit analysis collides with this to the extent that it threatens to establish a competing normativity – which is problematic for any kind of ethics (Chap. 1.7). In some countries, cost-benefit analysis may be allowed by the law in single cases, but only as a kind of additional tool for informing administrative decision-makers – and even this seems problematic in the light of the other objections discussed here. It should be noted that all of this is regardless of whether one assumes (as is the case here) that liberal-democratic law ultimately has a universal ethical basis of the kind described above (Chap. 3.1).

Unsolvable Problems of Application of Cost-Benefit Analysis: How the Promise of “More Rationality in Decision-Making” Fails

The following problems of cost-benefit analysis deal with problems of appliance. In contrast to the philosophical and legal challenges mentioned above, these issues – or at least some of them – have already been discussed for a long while in economics (Hansjürgens and Lienhoop 2015; Brent 2017; Nordhaus 2008; Anderson et al. 2015; Pearce et al. 2006; Hanley and Barbier 2009; Hausman 2012; Sen 1999).

The third problem is that many sustainability economists generate friction when using natural scientific knowledge. In concrete terms, the economic calculations mostly prove to be too optimistic in comparison, especially with regard to the necessity of drastic emission reductions (Chap. 1.2), but maybe also in their view of the role of economic growth and of further environmental problems. Even the most famous document on sustainability and climate economics, the Stern Report (Stern 2006), with its attempt to comprehensively determine the optimal cost-benefit ratio of climate-policy paths, is subject to these shortcomings, albeit less serious than its critics (Nordhaus 2008; Paqué 2010, pp. 102 et seq.), who even see Stern as alarmistic (and Stern 2009, conversely, reproaches its critics for the economic advantages of technical climate protection; Parry et al. 2009 forecast much higher losses due to climate change). Especially the possibly cynical, but perhaps largest monetary cost factor does not seem to occur with Stern (2006) – the costs of possible military conflicts over gas, water and other resources. A particularly problematic assumption of facts in climate economic calculations of “optimal” climate policy is the core assumption of “infinite” economic growth (in contrast, see Chap. 1.4).

The fourth friction of cost-benefit analysis is that sustainability problems such as climate change in their concrete course and economic consequences cannot be predicted exactly due to their high complexity, i.e. they are characterised by a high degree of uncertainty (see Chaps. 1.2 and 3.7). However, uncertain future events can hardly be integrated into precise cost calculations and, accordingly, the calculated costs of certain climate policy paths are also very difficult to determine (see also Wätzold 2000, pp. 299 et seq.; Sunstein 2005, pp. 351 et seq.; Sunstein 2009; Ismer 2014, pp. 65 et seq.). This is because if a future

event is not subject to a predeterminable probability of occurrence (risk), but rather that probability is uncertain (uncertainty), this per se eludes quantification (Chap. 1.2). One cannot say, for example, that an imminent climate damage of 10 billion euros with a 10% probability of occurrence counts as 1 billion euros. Stern's critics try to solve the problem by concluding that low damage forecasts are preferable (more detailed Byatt et al. 2006; Nordhaus 2008). More obvious, however, could be another conclusion: that the entire cost-benefit approach suggests a partly false impression of precision and thus requires an overall critical examination.

The fifth problem is this: Economists quantify all the concerns involved and then calculate the optimal level of ambition of climate protection. Everything that has a value for people, i.e. for which there is a preference, should be translated into monetary units, right down to life and health, everything else should not be taken into account (Nordhaus 2008; more open Burtraw and Sterner 2009; Hansjürgens and Lienhoop 2015; see also Hofmann 2007). There seems to be no need anymore for special balancing rules and for discussing limits to normative rationality; the benefit or damage facts determined merge with the preferences to a certain extent and ultimately result in monetarised data. This sounds attractive in so far as it does not describe any leeway, but can theoretically make precisely one policy recommendation and produce "clear figures" (Hansjürgens and Lienhoop 2015; Barkmann and Marggraf 2010; Hanley and Barbier 2009). However, even beyond the uncertainty problem and the general defect of empiricist normativity, the whole thing can hardly be implemented in a meaningful way. For example, there is already a lack of sufficiently precise facts as subsumption material for benefits and damages that have a market price (for example: the damage to the tourism industry in XY due to climate change in the next 50 years). This is especially true if, as in the case of climate change and biodiversity, the entire world economy comes up with an unmanageable number of individual actions, highly complex effects, interacting environmental problems, complex social responses (and reactions to these responses) and long-time periods. From an ecological point of view, the comparison of different decision options (inherent in a cost-benefit analysis) has therefore serious limits. Particularly in the case of biodiversity, cost-benefit analysis presupposes the substitutability of ecosystems, species or natural spaces. In the strict sense, however, comparability does not exist, and the complexity of nature is also simply very great (on this and the following Spangenberg and Settele 2010; Unmüßig 2014; Mathis 2009, p. 113; Otsuka 2006; differentiated Hansjürgens and Lienhoop 2015 and Hanley and Barbier 2009).

Another major problem is that the human damage caused by a failed environmental and nature conservation policy – at least at first glance – can hardly be reflected in market prices (pars pro toto Unnerstall 1999; granted by Stern 2009 and Hansjürgens and Lienhoop 2015). Millions of deaths and resource wars over water, for example due to climate change or a large number of destroyed ecosystems, would indeed also trigger costs in the common monetary sense, which could be

recorded, for example, as restoration costs. It is obvious, however, that the actually fatal aspect of such developments is only inadequately understood with reference to e.g. war and hospital costs.

How Willingness-to-Pay Analyses and Discounting Fail

However, economists try to solve the problem of dealing with concerns which do not naturally have a market value in often much differentiated forms (see in detail Hanley and Barbier 2009; Hansjürgens and Lienhoop 2015; Pearce et al. 2006; Ekardt 2019). In particular, attempts are being made to track down the costs and benefits of, for example, climate change and climate policy by trying to determine the hypothetical willingness of citizens to pay for the absence of hurricanes, for the continued existence of certain natural areas or, ultimately, for their own higher probability of survival. Such a determination is usually first attempted indirectly by observing behaviour. For example, the “morality of the markets” collected in this way aims to determine the value of ecosystems on the basis of the costs that people spend on being in the countryside or in its vicinity. Yet, there remain some general criticisms of the quantification of non-market goods that can hardly be dispelled. This is true despite a very broad and subtle discussion within economics, which tries to solve this problem. These are not marginal problems either; rather, the cost-benefit analysis fails as a broad approach, especially in terms of sustainability with all its non-monetised goods such as life and health, because (also) these problems of appliance are unsolvable (more detailed on the following Ekardt 2019; Spangenberg and Settele 2010).

- Regardless of how one tries to inquire or observe willingness to pay: Ultimately, the determination of what is of monetary value to someone, e.g. one’s own life or the absence of violent conflicts over resources, is always a fictitious and therefore not really informative element. This is all the more true since it is well known from behavioural research that the attitudes expressed by people often have little to do with their real behaviour – and that even the statements themselves, consciously or unconsciously, often do not reflect the real attitudes (see Chaps. 1.7 and 2.2).
- Even the idea conceivable as an alternative to analyses of the willingness to pay in the sense of a “moral of the markets” that the value of a human life could be depicted, for example, by the value of the lost income, appears to be hardly plausible (see also Hammer 2011; Ekardt 2019). Similarly, observations of the income people are paid in a dangerous occupation, e.g. construction workers, can hardly lead to a meaningful quantification. This is, among other things, because this implies the assumption that the construction workers decided voluntarily on their activity and its exact risk (of which they may not even be aware). And why should people who are apparently prepared to accept high risks be allowed to be

regarded as a representative cross-section of the population? Also, a switch to recovery costs hardly ever helps; on the one hand, a given sum may not reflect the full damage; on the other hand, many things (such as deaths) cannot be recovered. The fact that observations of preferences (“morality of the markets”) are always distorted to the detriment of future generations, which cannot yet be observed, adds to this. The same applies to experimental arrangements which, like surveys, still alter reality (Chap. 1.7).

- Furthermore, as already mentioned, the ability to pay limits the willingness to pay – with the consequence that the interests of a Canadian billionaire would weigh massively more than those of a central African school teacher, because the latter can pay little or nothing. Stern (2006), for example, realises this contrary to the economic mainstream, and yet he still suddenly offers monetary values for non-market losses. If he then assumes the same price for every human being when it comes to climate change, this is convincing *cum grano salis* (Chap. 3.8), but it lacks a justification within the framework of empiristic preference theory, which does not know any normative standards.

A sixth problem of sustainability and climate economics is discounting (also critical Unnerstall 1999; in parts Mathis 2009; moderate Stern 2009; skipped in Paqué 2010): future damage is supposed to count less than today’s damage. This is at least superficially understandable if the victim is the same individual today and in ten years’ time. But why should the damage of a Bangladeshi in 50 years be less important *per se* than my damage today? One could say that future people cannot yet express preferences, therefore they are of no interest. That would be the statement directly implied in preference theory. In that case, however, one would consequently not have to discount, but simply declare all the damage suffered by someone who is not yet alive to be irrelevant. And also with regard to people living today, the discounting is purely inconsistent regarding the passage of time. If preference theory is the basis, why should an economic theorist be allowed to tell me whether I have a preference for the present and, anyhow, should I care about the future?

Even the vague expectation of “infinite growth” cannot justify discounting, neither for those already alive today nor for future generations; the limits to growth should be borne in mind here (Chap. 1.4). And even the empirical observation of real price relationships on the market, which many economists believe express a preference for the present over the future, does not justify discounting. For there are no observable market or interest rate developments that would say anything at all about the *de facto* preferences that exist over the course of several centuries with regard to claims. Moreover, in the case of drawing conclusions from market prices, only the preferences of those living today are taken into account. Ultimately, reference should be made here to the criticism of quantification presented above.

However, Stern (2006) cites at least one substantial argument for discounting: the uncertain probability of future loss events occurring (see also Mathis 2009). It has already been stated above that this reduces the weight of normative interests in an abstract way (Chap. 3.7). Nevertheless, it is doubtful whether this can be

expressed mathematically. If no mathematical probability can be determined for future events, a supposedly clear discount rate is ultimately arbitrary. And regardless of this, the discounting always remains afflicted with the problems of quantification.

Can Cost-Benefit Analysis Survive at Least in Parts?

We have seen that cost-benefit analysis fails as an alternative mode for balancing (also, but not exclusively) in terms of sustainability, since it contains serious philosophical and legal flaws as well as unsolvable problems of appliance (inter alia regarding quantification, natural scientific facts, discounting, and the determination of preferences). Yet, there are also efforts among economists (albeit not majoritarian) to carry out some of the economic evaluation qualitatively rather than quantitatively. It is then acknowledged that it is not possible to put everything into a numerical form, for example the concrete value of a human life; moreover, attempts may be made to determine the willingness to pay more carefully, e.g. by having the interviewees informed in more detail or discussed among themselves (Spash 2007; Brouwer et al. 2011; Hansjürgens and Lienhoop 2015; MacMillan et al. 2006; Nestle 2012). This is a step towards more differentiated approaches. This, however, does not eliminate points of criticism such as the ethical untenability of the empiricist basis of the cost-benefit analysis and the conflict with the law. It also does not (or not fully) solve most of the described problems of appliance such as discounting, the fictitious character of the willingness to pay, the unsolvable problems arising with uncertainty, and the overcomplexity of the world (e.g. of biodiversity). In addition, the empiricist approach here becomes unfaithful to itself in that it presupposes that people do not know what they want and that they must be informed about their “real interests” (which, by definition, cannot exist under empiricist conditions).

The same points of criticism also arise if the cost-benefit analysis is supplemented by ethical considerations, as in the IPCC’s Fifth Assessment Report (IPCC WG III 2014). Adding philosophical approaches of Rawls and Sen, which can also be criticised (Chaps. 3.1 and 3.2), does not help cost-benefit analysis. It also does not work to intensify the analysis of de facto altruist preferences of consumers, since this has nothing to do with – normative – ethics. Once again, this reminds us that empiricist perspectives tend to overlook the crucial distinctions between explanation and justification, between descriptive behavioural analysis and normative (ethical or legal) approaches to the right behaviour, and between genesis and validity of statements (Chap. 1.6).

The points of criticism mentioned above are repeated again if, in more recent economic approaches (e.g. Hansjürgens and Lienhoop 2015; Mathis 2009), irreplaceable goods are excluded from netting costs and benefits. Who should be able to determine which goods are “irreplaceable” in an empiricist theoretical framework that knows no normative right or wrong? And what does “irreplaceable”

actually mean – an old vase may seem irreplaceable to someone, but does this mean that one is obliged to preserve it without any consideration and for all time? Or what about a stable global climate or a rich biodiversity – if humankind prefers short-term pleasure and profit to long-term survival? In the logic of factual preferences little speaks in favour of “irreplaceability”. And careful observation of the “morality of markets” as a revealer of de facto preferences suggests that those preferences tend not to be in favour of protecting climate and biodiversity as “irreplaceable” (see the analysis of the ecological footprint of Westerners and of upper classes in the emerging economies in Chap. 1.2 – and the behavioural explanation for that in Chap. 2).

To sum up: It is not possible to calculate the ethically and legally correct degree of sustainability in terms of money. Cost-benefit analysis suffers from unsolvable philosophical and legal challenges as well as problems of appliance. The program to widen the limits to normative rationality – compared to universal ethics and the law – by means of counting has failed. However, within the framework of the balancing rules (Chap. 3.5), single elements of cost-benefit analysis may remain very helpful (see in more detail Ekardt 2019). This is the case with regard to quantifications of mere facts of benefits and damages e.g. of climate change and climate policy. Those facts can serve as subsumption material for balancing the different spheres of freedom (but without replacing rights by preferences, without counting the weight of the rights in terms of money, without discounting, without mathematising uncertainty, without counting facts that are too complex to be counted, and without willingness and ability to pay). Furthermore, within the objective framework of the balancing rules (!), the legislator may also make its scope for subjective weightings more transparent and comprehensible to such an extent that it assigns a numerical value to normative concerns; but this is then a subjective decision, and this subjective decision is not to be taken by some economist, but by an institution in charge of filling a given leeway, and it is up to by an elected politician (see Klöhn 2006, pp. 176 et seq.; Hofmann 2007, pp. 251 et seq.). In contrast to all of this criticism, sustainability economics is of crucial importance for governance research, as we will see later (Chap. 4), but it is not the only discipline of importance.

After all this, we can give a clear account of the total yield of normative sustainability. New about the normative analyses of this book are in particular: The revised justification for a (heterodox discourse-ethical) universalism offered, i.e. for why and to what extent normative questions can be objectively decided with reasons. And the new concept of freedom offered that on the one hand is comprehensive and on the other hand does not lack the legal background and the required differentiation – which other ethical approaches are missing. On the basis of these points, a system of balanced decision-making (including institutions) is developed, which neither overestimates the exact decidability of single questions like many economists and also ethicists (without monetising), nor stops at very vague statements.

Repetition Questions

1. What does justice mean, how does it differ from social distributive justice, what are the basic theories of justice, and which problems do they pose? (Chaps. 1.6 and 3.1)
2. What is the relationship between law and ethics? (Chaps. 1.7 and 3.1)
3. What does liberalism mean, what are the basic principles of liberal democracy, and how do they relate to each other? (Chaps. 3.1 and 3.2)
4. What is meant by human rights, to what extent must the current understanding of freedom be revised, and what does this have to do with sustainability? (Chaps. 3.2 and 3.4)
5. Which arguments can be made for an intertemporal and global extension of universal freedom, legally and ethically? (Chap. 3.3)
6. Which problems arise when legal and ethical attempts are made to decide questions of social distributive justice and questions of good life – and does this matter in terms of sustainability? (Chap. 3.4)
7. Why should democracy – ethically and legally – be representative and have separation of powers, and why is eco-dictatorship not a solution with regard to sustainability? (Chap. 3.5)
8. Why do normative decisions inevitably involve balancing procedures? How is to deal with issues of uncertainty and precaution? (Chaps. 3.5, and 3.7)
9. Which balancing rules can be derived from the liberal basic principles, and for what reasons is more sustainability and especially much more climate protection required, legally and ethically? (Chaps. 3.6 and 3.8)
10. Which legal, ethical and application-related frictions does the economic cost-benefit analysis show as an alternative balancing model? (Chap. 3.9)

Bibliography¹

- Acemoglu, Daron/ Robinson, James: Why Nations Fail. The Origins of Power, Prosperity and Poverty, London 2012.
- Albert, Hans: Rechtswissenschaft als Realwissenschaft. Das Recht als soziale Tatsache und die Aufgabe der Jurisprudenz, Baden-Baden 1993.
- Alexy, Robert: Recht, Vernunft, Diskurs, Frankfurt a.M. 1995.
- Alexy, Robert: Theorie der Grundrechte, Frankfurt a.M. 1986.
- Alexy, Robert: Theorie der juristischen Argumentation, 2nd ed. Frankfurt a.M. 1991.
- Anderson, Mark/ Teisl, Mario/ Noblet, Caroline/ Klein, Sharon: The Incompatibility of Benefit-Cost Analysis with Sustainability science, Sustainability Science 10-1/ 2015, DOI: <https://doi.org/10.1007/s11625-014-0266-4>.

¹In accordance with legal practice, parliamentary, governmental and EU Commission documents as well as laws and judgments are not listed in the bibliography, as they can be found unequivocally on the basis of the reference given in the continuous text or via the general search engines. The last access date for all internet sources is 31/07/2018.

- Apel, Karl-Otto: Diskursethik vor der Problematik von Recht und Politik, in: Apel, Karl-Otto/ Kettner, Matthias (Ed.): Zur Anwendung der Diskursethik in Politik, Recht und Wissenschaft, 2nd ed. Frankfurt a.M. 1993, pp. 29 et seq.
- Apel, Karl-Otto: Transformation der Philosophie, 2 vol., Frankfurt a.M. 1976.
- Arndt, Birger: Das Vorsorgeprinzip in der Europäischen Union, Berlin 2009.
- Attfield, Robin: The Ethics of the Global Environment, Edinburgh 1999.
- Bäcker, Carsten: On the Limited Rationality of Balancing, in: IVR (Ed.): Global Harmony and Rule of Law, Abstracts of the 24th World Congress, Beijing 2009, pp. 27 et seq.
- Bailey, Ian: Neoliberalism, climate governance and the scalar politics of EU emissions trading, *Area* 2007, pp. 431 et seq.
- Barkmann, Jan/ Marggraf, Rainer: Zahlungsbereitschaftsanalysen für Umweltgüter – wirklich „Finger weg“?, *GAIA* 2010, pp. 250 et seq.
- Beck, Ulrich: Beyond Class and Nation: Reframing Social Inequalities in a Globalizing World, *BJS* 2007, pp. 679 et seq.
- Beck, Ulrich: Risikogesellschaft. Auf dem Weg in eine andere Moderne, Frankfurt a.M. 1986.
- Becker, Gary S.: Der ökonomische Ansatz zur Erklärung menschlichen Verhaltens, 2. Aufl. Tübingen 1993.
- Bedall, Philip: Climate Justice versus Klimaneoliberalismus?, Bielefeld 2014.
- Bentham, Jeremy: Introduction to the Principles of Morals and Legislation, ed. by J.H. Burns/ H.L.A. Hart, The Collected Works of Jeremy Bentham, 2nd ed. Oxford 1996.
- Berlin, Isaiah: Four Essays on Liberty, Oxford 1969.
- von Bernstorff, Jochen: Social Rights and WTO-Law. Is socio-economic Certification of Bioenergy compatible with International Trade Law?, *Verfassung und Recht in Übersee* 2009, 477 et seq.
- Birnbacher, Dieter: Verantwortung für zukünftige Generationen, Stuttgart 1988.
- Bleischwitz, Raimund/ Bahn-Walkowiak, Bettina/ Ekardt, Felix/ Feldt, Heidi/ Fuhr, Lili: International Resource Politics, Berlin 2012.
- Böhm, Monika: Der Normmensch. Materielle und prozedurale Aspekte des Schutzes der menschlichen Gesundheit vor Umweltschadstoffen, Tübingen 1996.
- Boyle, Alan: Human Rights and the Environment – where next? *European Journal of International Law* 2012, 613 et seq.
- von Braun, Joachim: Welternährung und Nachhaltigkeit. Herausforderungen und Strategien für das 21. Jahrhundert, München 2015.
- Breining-Kaufmann, Christine: Right to Food and Trade in Agriculture, in: Cottier, Thomas/ Pauwelyn, Joost / Bürgi Bonanomi, Elisabeth (Ed.): Human Rights and International Trade, 2005, Chapter 6.
- Brent, Robert: Advanced Introduction to Cost-Benefit Analysis, Cheltenham 2017.
- Brouwer, Roy et al.: Guidelines for estimating costs and benefits of policy instruments for biodiversity conservation, 2011, <http://policymix.nina.no>.
- Bugge, Hans Christian/ Voigt, Christina (Ed.): Sustainable Development in International and National Law, Groningen 2008.
- Bugge, Hans-Christian: 1987–2007: “Our Common Future” Revisited, in: Bugge, Hans Christian/ Voigt, Christina (Ed.): Sustainable Development in International and National Law, Groningen 2008, pp. 3 et seq.
- Burtraw, Dallas/ Sterner, Thomas: Climate Change Abatement: Not „Stern“ Enough?, 2009, http://www.rff.org/Publications/WPC/Pages/09_04_06_Climate_Change_Abatement.aspx.
- Busse, Matthias: Do Transnational Corporations Care about Labor Standards?, *Journal of Developing Areas* 2003, pp. 39 et seq.
- Bussemer, Thymian: Die erregte Republik. Wutbürger und die Macht der Medien, Stuttgart 2011.
- Byatt, Ian et al.: The Stern Review: A Dual Critique. Part II. Economic Aspects, *World Economics* 2006, pp. 199 et seq.
- Calliess, Christian: Die Menschenwürde im Recht der Europäischen Union, in: Gröschner, Rolf/ Lembcke, Oliver (Ed.): Das Dogma der Unantastbarkeit. Eine Auseinandersetzung mit dem Absolutheitsanspruch der Würde, Tübingen 2009, pp. 133 et seq.

- Calliess, Christian: Rechtsstaat und Umweltstaat. Zugleich ein Beitrag zur Grundrechtsdogmatik im Rahmen mehrpoliger Verfassungsrechtsverhältnisse, Tübingen 2001.
- Cameron, Edward: Human Rights and Climate Change. Moving from an Intrinsic to an Instrumental Approach, *Georgia Journal of International and Comparative Law* 2010, pp. 673 et seq.
- Cooper, Ian: A 'Virtual Third Chamber' for the European Union? *National Parliaments after the Treaty of Lisbon*, *West European Politics*, *West European Politics* 2012, pp. 441 et seq.
- Cordonier Segger, Marie Claire: Sustainable Development in International Law, in: Bugge, Hans Christian/ Voigt, Christina (Ed.): *Sustainable Development in International and National Law*, Groningen 2008, pp. 87 et seq.
- Correll, Cathrin: *Freiheit und Individuum*, Baden-Baden 1998.
- Crouch, Colin: *Post-Democracy*, Cambridge 2004.
- Deaton, Angus: *The Great Escape. Health, Wealth, and the Origins of Inequality*, Princeton 2013.
- Dietrich, Frank: *Dimensionen der Verteilungsgerechtigkeit*, Stuttgart 2001.
- Donnelly, Jack: Third generation rights, in: Brölmann, Catherine/ Lefeber, René/ Zieck, Marjolaine (Ed.): *Peoples and Minorities in International Law*, Paris 1993, pp. 119 et seq.
- Dudai, Ron: Climate Change and Human Rights Practice. *Journal of Human Rights Practice* 2009, 294 et seq.
- DuPuis, E. Melanie/ Gareau, Brian: Neoliberal Knowledge: The Decline of Technocracy and the Weakening of the Montreal Protocol, *Social Science Quarterly* 2008, pp. 1212 et seq.
- Dworkin, Ronald: It is absurd to calculate human rights according to a cost-benefit analysis, *The Guardian* vom 24.05.2006, S. 12.
- Dworkin, Ronald: *Taking Rights Seriously*, Harvard 1977.
- Dworkin, Ronald: What is Equality? Part 2: Equality of Resources, *PPA* 1981, pp. 194 et seq.
- Ekardt, Felix: Economic Evaluation, Cost-Benefit Analysis, *Economic Ethics: A Critique with Regard to Climate Economics - about Figures in the Sustainability Discourse*, Dordrecht 2019, in print.
- Ekardt, Felix: *Kurzschluss. Wie einfache Wahrheiten die Demokratie untergraben*, Berlin 2017.
- Ekardt, Felix/ Hyla, Anna: Human Rights, the Right to Food, Legal Philosophy, and General Principles of International Law, *ARSP* 2017, pp. 221 et seq.
- Ekardt, Felix: *Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel*, 3rd ed. (= 2nd ed. der Neuausgabe) Baden-Baden 2016a.
- Ekardt, Felix: *Umweltschutz durch Zivilrecht – Nachhaltigkeit durch Kapitalgesellschaftsrecht?*, *Zeitschrift für Umweltrecht* 2016b, pp. 453 et seq.
- Ekardt, Felix/ Wieding, Jutta/ Henkel, Marianne: *Climate Justice 2015 – BUNDposition*, Berlin 2015a.
- Ekardt, Felix/ Hennig, Bettina: *Ökonomische Instrumente und Bewertungen der Biodiversität. Lehren für den Naturschutz aus dem Klimaschutz?*, Marburg 2015.
- Ekardt, Felix/ Neumann, Werner/ Wieding, Jutta/ Schmidt-Kanefendt, Hans-Heinrich: *Grundlagen und Konzepte einer Energiewende 2050 – BUNDposition*, Berlin 2015b.
- Ekardt, Felix/ Kornack, Daniel: „Europäische“ und „deutsche“ Menschenwürde und die Gentechnik-Forschungsförderung, *ZEuS* 2010, pp. 111 et seq.
- Ekardt, Felix/ Meyer-Mews, Swantje/ Hyla, Anna: *Knappheit, Rationierung und Verteilungsentscheidungen beim Existenzminimum*, *Neue Justiz* 2012, pp. 25 et seq.
- Ekardt, Felix/ Meyer-Mews, Swantje/ Schmeichel, Andrea/ Steffenhagen, Larissa: *Globalisierung und soziale Ungleichheit – Welthandelsrecht und Sozialstaatlichkeit*, Böckler-Arbeitspapier Nr. 170, Düsseldorf 2009.
- Ekardt, Felix/ von Bredow, Hartwig: *Managing the Ecological and Social Ambivalences of Bioenergy – Sustainability Criteria versus Extended Carbon Markets*, in: Leal, Walter (Ed.): *The Economic, Social, and Political Aspects of Climate Change*, Berlin 2010, pp. 455 et seq.
- Ekardt, Felix: *Liberalismus, Besitzindividualismus und Handlungstheorie*, Leipzig 2003.
- Ekardt, Felix: *Steuerungsdefizite im Umweltrecht: Ursachen unter besonderer Berücksichtigung des Naturschutzrechts und der Grundrechte. Zugleich zur Relevanz religiösen Säkularisats im öffentlichen Recht*, Sinzheim 2001.

- Engländer, Armin: Diskurs als Rechtsquelle? Zur Kritik der Diskurstheorie des Rechts. Tübingen 2002.
- Engle, Eric: Knight's Gambit to Fool's Mate. Beyond Legal Realism, Valparaiso University Law Review 2007, 1633 et seq.
- Exner, Anne-Katrin: Clean Development Mechanism und alternative Klimaschutzansätze. Rechts- und Governancefragen, Marburg 2016.
- Fikkers, Saskia: Legislating for Future Generations? Goal Regulation, ARSP 2016, pp. 2 et seq.
- Fischer, Corinna/ Griebhammer, Rainer et al.: Mehr als nur weniger. Suffizienz – Begriff, Begründung und Potenziale, Freiburg 2013, <http://www.oeko.de/oekodoc/1836/2013-505-de.pdf>.
- Forst, Rainer: Contexts of Justice. Political Philosophy beyond Liberalism and Communitarianism, Berkeley 2002.
- Foucault, Michel: History of Madness. New York 2006.
- Francot, L.M.A.: Dealing with Complexity, Facing Uncertainty. Morality and Ethics in a Complex Society, ARSP 2014, pp. 201 et seq.
- Frankfurt, Harry: On Equality, Princeton 2015.
- Friedman, Milton: Capitalism and Freedom, Chicago 1962.
- Fücks, Ralf: Intelligent wachsen. Die grüne Revolution, München 2013.
- Gawel, Erik/ Bretschneider, Wolfgang: Gehalt und Grenzen eines Rechts auf Wasser – ein Zwischenruf, Archiv des öffentlichen Rechts 2012, pp. 321 et seq.
- Gawel, Erik: Ökonomische Effizienzanforderungen und ihre juristische Rezeption, in: Gawel, Erik (Ed.): Effizienz im Umweltrecht, Baden-Baden 2001, pp. 9 et seq.
- Gesang, Bernward: Klimaethik, Berlin 2011.
- Gibson, Noralee: The Right to a Clean Environment, Saskatchewan Law Review 1990, pp. 5 et seq.
- Giegerich, Thomas: Grund- und Menschenrechte im globalen Zeitalter, EuGRZ 2004, pp. 758 et seq.
- Giezel, Mendel: Shifting Infrastructure Landscapes in a Circular Economy: An Institutional Work Analysis of the Water and Energy Sector, Sustainability 2018, pp. 3487 et seq.
- Global Initiative for Economic, Social and Cultural Rights: Human Rights Law Sources – UN Pronouncements on Extra-Territorial Obligations, 2015.
- Gough, Ian: Heat, Greed and Human Need. Climate Change, Capitalism and Sustainable Wellbeing, Cheltenham 2017.
- Grafakos, Stelios et al.: Integrating Environmental, Sociopolitical, Economic, and Technological Dimensions for the Assessment of Climate Policy Instruments, in: Leal, Walter (Ed.): The Economic, Social, and Political Aspects of Climate Change, Berlin 2010, S. 623 et seq.
- Grear, Anna: Towards Climate Justice?, Journal of Human Rights and the Environment 2014 (Special Issue), pp. 103 et seq.
- Haberl, Helmut/ Erb, Karl-Heinz: Assessment of Sustainable Land Use in Producing Biomass, in: Dewulf, John/ Langenhove, Herman V. (Ed.): Renewables-Based Technology: Sustainability Assessment, London 2006, pp. 176 et seq.
- Habermas, Jürgen: Faktizität und Geltung, Frankfurt a.M. 1992.
- Habermas, Jürgen: Moralbewusstsein und kommunikatives Handeln, Frankfurt a.M. 1983.
- Habermas, Jürgen: Theorie des kommunikativen Handelns, 2 vol., Frankfurt a.M. 1981.
- Habermas, Jürgen: Zwischen Naturalismus und Religion, Frankfurt a.M. 2005.
- Hamann, Hanjo: Evidenzbasierte Jurisprudenz. Methoden empirischer Forschung und ihr Erkenntniswert für das Recht am Beispiel des Gesellschaftsrechts, Tübingen 2014.
- Hammer, Balz: Valuing the Invaluable? Valuation of a Statistical Life, in: Mathis, Klaus (Ed.): Efficiency, Sustainability, and Justice to Future Generations, Dordrecht 2011, pp. 211 et seq.
- Hanley, Nick/ Barbier, Edward: Pricing Nature. Cost-Benefit Analysis and Environmental Policy, Cheltenham 2009.
- Hansjürgens, Bernd/ Lienhoop, Nele: Was uns die Natur wert ist. Potenziale ökonomischer Bewertungen, Marburg 2015.
- Harsanyi, John: Rule Utilitarianism and Decision Theory, in: Gottinger, H. W./ Leinfellner, W. (Ed.): Decision Theory and Social Ethics. Issues in Social Choice, Dordrecht 1978, pp. 3 et seq.

- Hausman, Jerry: Contingent Valuation – from Dubious to Hopeless, *Journal of Economic Perspectives* 2012, pp. 43 et seq.
- Hennig, Bettina: Nachhaltige Landnutzung und Bioenergie. Ambivalenzen, Governance, Rechtsfragen, Marburg 2017.
- Herrler, Christoph: Warum eigentlich Klimaschutz? Zur Begründung von Klimapolitik, Baden-Baden 2017.
- Hiskes, Richard: The Human Right to a Green Future. *Environmental Rights and Intergenerational Justice*, Cambridge 2009.
- Hobbes, Thomas: *De Homine*, Opera Philosophica, Neudruck Aalen 1966.
- Hofmann, Ekkehard: Abwägung im Recht – Chancen und Grenzen numerischer Verfahren im öffentlichen Recht, Tübingen 2007.
- Honkonen, Thomas: The Principle of Common but Differentiated Responsibilities in Post-2012 Climate Negotiations, *Review of European Community and International Environmental Law* 2009, pp. 257 et seq.
- Hosang, Maik/ Fraenzle, Stefan/ Markert, Bernd: Die emotionale Matrix. Grundlagen für gesellschaftlichen Wandel und nachhaltige Innovation, München 2005.
- ILA (International Law Association): *Legal Principles Relating to Climate Change*. Washington 2014.
- Illies, Christian: *The Grounds of Ethical Judgement – New Transcendental Arguments in Moral Philosophy*, Oxford 2003.
- IPCC (Intergovernmental Panel on Climate Change): *Climate Change 2014, Fifth Assessment Report*, Cambridge 2014.
- Ismer, Roland: Klimaschutz als Rechtsproblem. Steuerung durch Preisinstrumente vor dem Hintergrund einer parallelen Evolution von Klimaschutzregimes verschiedener Staaten, Tübingen 2014.
- Jakob, Michael/ Edenhofer, Ottmar: Growth, Degrowth, and the Commons, *Oxford Review of Economic Policy* 2014, 447 et seq.
- Jamieson, Dale: *Reason in a Dark Time. Why the struggle against climate change failed – and what it means for our future*, Oxford 2014.
- Janis, Irving: *Victims of Groupthink*, Boston 1972.
- Jensen, Annette/ Scheub, Ute: *Glücksökonomie*, München 2015.
- Jonas, Hans: *Das Prinzip Verantwortung*, Frankfurt a.M. 1979.
- Kahl, Wolfgang: *Nachhaltigkeitsverfassung – Reformüberlegungen*, Tübingen 2018.
- Kanalani, Ibrahim: Die universelle Durchsetzung des Rechts auf Nahrung gegen transnationale Unternehmen, Tübingen 2015.
- Kant, Immanuel: *Metaphysik der Sitten*, Neuausgabe Frankfurt a.M. 1978.
- Kant, Immanuel: *Zum Ewigen Frieden*, Neuausgabe Frankfurt a.M. 2005.
- Kartha, Sivan/ Baer, Paul/ Athanasiou, Tom: The Right to Development in a Climate Constrained World. The Greenhouse Development Rights Framework, Paper of the Heinrich-Böll-Stiftung, EcoEquity, and the Stockholm Environmental Institute, Stockholm 2007.
- Kelsen, Hans: *Was ist Gerechtigkeit?*, Stuttgart 2000.
- Kim, Rakhyun/ Bosselmann, Klaus: Operationalizing Sustainable Development: Ecological Integrity as a Grundnorm of International Law, *Review of European, Comparative and International Environmental Law* 2015, pp. 194 et seq.
- Klöhn, Lars: *Kapitalmarkt, Spekulation und Behavioral Finance*, Berlin 2006.
- Knox, John: Linking Human Rights and Climate Change at the United Nations, *Harvard Environmental Law Review* 2009a, 477 et seq.
- Knox, John: Climate Change and Human Rights Law, *Virginia Journal of International Law* 2009b, 1 et seq.
- Koenig, Christian: *Die öffentlich-rechtliche Verteilungslenkung. Grund und Grenzen einer Deregulierung am Beispiel der Vergabe von Konzessionen, Kontingenten und Genehmigungen zur unternehmerischen Nutzung öffentlich verwalteter Güter*, Berlin 1994.
- Koskenniemi, Martti: *From Apology to Utopia*, Cambridge 2005.

- Kotzé, Louis: Human Rights and the Environment in the Anthropocene, *The Anthropocene Review* 2014, pp. 252 et seq.
- Krisch, Nico: *Beyond Constitutionalism. The Pluralist Structure of Postnational Law*, Oxford 2010.
- Kuhlmann, Wolfgang: Begründungsprobleme der Diskursethik, in: Niquet, Marcel/ Herrero, Francisco Javier/ Hanke, Michael (Ed.): *Diskursethik. Grundlegungen und Anwendungen*, Würzburg 2001, pp. 9 et seq.
- Löfstedt, Ragnar: A possible way forward for evidence-based and risk-informed policy-making in Europe: a personal view, *Journal of Risk Research* 2014, pp. 1089 et seq.
- Lübbe, Weyma: *Neminem laedere?* ARSP 2000 (Special Issue 74), pp. 73 et seq.
- Lübbe, Weyma: *Verantwortung in komplexen kulturellen Prozessen*, Freiburg 1998.
- Luhmann, Niklas: *Das Recht der Gesellschaft*, Frankfurt a.M. 1993.
- Lumer, Christoph: *The Greenhouse: A Welfare Assessment and Some Morals*, Lanham 2000.
- Lyster, Rosemary: Towards a Global Justice Vision for Climate Law in a Time of “Unreason”, *Journal of Human Rights and the Environment* 2013, pp. 32 et seq.
- MacIntyre, Alasdair: *Whose Justice? Which Rationality?*, London 1988.
- MacMillan, Douglas/ Hanley, Nick/ Lienhoop, Nele: *Contingent valuation: Environmental polling or preference engine?*, *Ecological Economics* 2006, pp. 299 et seq.
- Macpherson, C.B.: *The political theory of possessive individualism. From Hobbes to Locke*, Toronto 1962.
- Markus, Jean-Paul et al.: *Quelle responsabilité juridique envers le générations futures?*, Paris 2012.
- Mathis, Klaus: *Efficiency instead of Justice? Searching for the Philosophical Foundations of the Economic Analysis of Law*, Berlin 2009.
- Maurmann, Dorothee: *Rechtsgrundsätze im Völkerrecht – am Beispiel des Vorsorgeprinzips*, Baden-Baden 2008.
- McCrudden, Christopher: *Human Dignity and Judicial Interpretation of Human Rights*, *European Journal of International Law* 2008, pp. 655 et seq.
- Meßerschmidt, Klaus: *Gesetzgebungsermessen*, Berlin 2000.
- Meyer, Kirsten: *How to be Consistent without Saving the Greater Number*, *Philosophy & Public Affairs* 2006, pp. 136 et seq.
- Meyer, Lukas/ Roser, Dominic: *Distributive Justice and Climate Rights. The Allocation of Emission Rights*, *Analyse & Kritik* 2006, pp. 223 et seq.
- Miller, Holmes/ Engemann, Kurt: *The precautionary principle and unintended consequences*, *Kybernetes* 2018, in print.
- Moellendorf, Darrel: *Cosmopolitan Justice*, Cambridge/ Mass. 2002.
- Moellendorf, Darrel: *The Moral Challenge of Dangerous Climate Change. Values, Poverty, and Policy*, Cambridge 2014.
- Morgenthauer, Gerd: *Freiheit durch Gesetz*, Tübingen 1999.
- Muraca, Barbara: *Gut leben. Eine Gesellschaft jenseits des Wachstums*, Bonn 2015.
- Murswiek, Dietrich: *Die staatliche Verantwortung für die Risiken der Technik*, Berlin 1985.
- Murswiek, Dietrich: *Paradoxa der Demokratie – Volkssouveränität und Normbindung*, *Juristenzeitung* 2017, pp. 53 et seq.
- Nagel, Thomas: *The last word*, New York 1997.
- Nagel, Thomas: *Mind and Cosmos: why the materialist neo-Darwinian conception of nature is almost certainly false*, New York 2012.
- Nestle, Ingrid: *The costs of climate change in the agricultural sector. A comparison of two calculation approaches*, Dissertation, Flensburg 2012.
- Nickel, James: *The Right to a Safe Environment*, *Yale Law Journal* 1993, pp. 281 et seq.
- Nordhaus, William: *A Question of Balance. Weighing the Options on Global Warming Policies*, New Haven 2008.
- Nowak, Martin/ Highfield, Roger: *Kooperative Intelligenz. Das Erfolgsgeheimnis der Evolution*, München 2013.
- OECD: *Biofuels: Linking Support To Performance*, 2008.

- Office of the High Commissioner for Human Rights (OHCHR): Report on the relationship between climate change and human rights, UN Doc. A/ HRC/ 10/ 61 vom 15.01.2009.
- OHCHR: The Effects of Climate Change on the Full Enjoyment of Human Rights, Genf 2015.
- OHCHR: Mapping Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment. Focus report on human rights and climate change, Genf 2014.
- OHCHR: Mapping Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment. Individual Report on Global and Regional Environmental Agreements, Genf 2013.
- Otsuka, Michael: Saving Lives, Moral Theory, and the Claims of Individuals, *Philosophy & Public Affairs* 2006, pp. 109 et seq.
- Ott, Konrad: Institutionalizing Strong Sustainability. A Rawlsian Perspective, *Sustainability* 2014, pp. 894 et seq.
- Ott, Konrad: Domains of Climate Ethics, *Jahrbuch für Wissenschaft und Ethik* 2011, pp. 95 et seq.
- Ott, Konrad/ Döring, Ralf: Theorie und Praxis starker Nachhaltigkeit, Marburg 2004.
- Paden, Roger: Rawls's Just Savings Principle and the Sense of Justice, *Social Theory and Practice* 1997, pp. 27 et seq.
- Page, Edward: *Climate Change, Justice and Future Generations*, Cheltenham 2006.
- Paqué, Karl-Heinz: *Wachstum! Die Zukunft des globalen Kapitalismus*, München 2010.
- Parry, Martin et al.: Assessing the costs of adaptation to climate change: a review of the UNFCCC and other recent estimates, 2009, <http://www.iied.org/climate-change/key-issues/economics-and-equity-adaptation/costs-adapting-climate-change-significantly-under-estimated>.
- Pauw, Pieter et al.: Different Perspectives on Differentiated Responsibilities. A State-of-the-Art Review of the Notion of Common but Differentiated Responsibility, Bonn 2014.
- Pavcnik, Marijan: The Principle of Proportionality, in: IVR (Ed.): *Global Harmony and Rule of Law, Abstracts of the 24th World Congress*, Beijing 2009, pp. 19 et seq.
- Pearce, David/ Atkinson, Giles/ Mourato, Susana: *Cost-Benefit Analysis and the Environment. Recent Development*, Paris 2006.
- Peers, Steve/ Hervey, Tamara/ Kenner, Jeff/ Ward, Angela (Ed.): *The EU Charter of Fundamental Rights*, Oxford 2014.
- Peters, Glen/ Minx, Jan/ Weber, Christopher/ Edenhofer, Ottmar: Growth in emission transfers via international trade from 1990 to 2008, *PNAS* 2011, pp. 8903 et seq.
- Philippopoulos-Mihalopoulos, Andreas/ Brooks, Victoria (Ed.): *Research Methods in Environmental Law. A Handbook*, Cheltenham 2017.
- Piketty, Thomas: *Capital in the 21st Century*, Harvard 2014.
- Popper, Karl: *The open society and its enemies*, London 1945.
- Posner, Richard: Wealth Maximization Revisited, *Notre Dame Journal of Law, Ethics and Public Policy* 1986, pp. 85 et seq.
- Radermacher, Franz Josef/ Beyers, Bert: *Welt mit Zukunft. Die ökosoziale Perspektive*, 2nd ed. Hamburg 2011.
- Rawls, John: *The Law of Peoples*, Cambridge/ Mass. 1999.
- Rawls, John: *Political Liberalism*, Cambridge/ Mass. 1992.
- Rawls, John: *A Theory of Justice*, Cambridge/ Mass. 1971.
- Rawls, John: *A Theory of Justice, Revised Edition*, Cambridge/ Mass. 2003.
- Raz, Joseph: Individual Rights in the World Order, in: IVR (Ed.): *Global Harmony and Rule of Law, Papers of the 24th World Congress*, Beijing 2009, pp. 1 et seq.
- Read, Rupert/ O'Riordan, Tim: *The Precautionary Principle under Fire, Environment Science and Policy for Sustainable Development* 2017, in print.
- Rorty, Richard: *Contingency, Irony, and Solidarity*, Cambridge 1989.
- Sands, Philippe/ Peel, Jacqueline: *Principles of International Environmental Law*, 4th ed. Cambridge 2018.
- Scheidler, Fabian: *Das Ende der Megamaschine. Geschichte einer scheiternden Zivilisation*, Wien 2015.

- Schellnhuber, Hans Joachim: Selbstverbrennung. Die fatale Dreiecksbeziehung zwischen Klima, Mensch und Kohlenstoff, München 2015.
- Schnug, Ewald/ Schnug, Lisbeth: Poor Wretch! Or: Do Earthworms deserve our Morality?, 2015, https://www.researchgate.net/profile/Ewald_Schnug/publications.
- Scholz, Roland: Environmental Literacy in Science and Society. From Knowledge to Decisions, Cambridge 2011.
- Schwerd, Joachim: Der Treibhausgasemissionshandel in evolutionsökonomischer Perspektive, Marburg 2008.
- Schwerdtfeger, Angela: Implementation and the Separation of Powers, in: Lohse, Eva Julia/ Poto, Margherita (Ed.): Participatory Rights in the Environmental Decision-Making Process and the Implementation of the Aarhus Convention – a Comparative Perspective, Berlin 2015, pp. 173 et seq.
- Sen, Amartya: The Idea of Justice, Harvard 2009.
- Sen, Amartya: Elements of a Theory of Human Rights, PPA 2004, pp. 315 et seq.
- Sen, Amartya: Development as Freedom, New York 1999.
- Shue, Henry: Climate Justice. Vulnerability and Protection, Oxford 2014.
- Siemer, Stefan: Nachhaltigkeit unterscheiden. Eine systemtheoretische Gegenposition zur liberalen Fundierung der Nachhaltigkeit, in: Ekardt, Felix (Ed.): Generationengerechtigkeit und Zukunftsfähigkeit. Philosophische, juristische, ökonomische, politologische und theologische Neuansätze in der Umwelt-, Sozial- und Wirtschaftspolitik, 2006, pp. 129 et seq.
- Singer, Peter: Climate change, eating meat and ending poverty, Milthorpe Lecture 2009.
- Skillington, Tracey: Climate Change and the Human Rights Challenge. Extending Justice beyond the Borders of the Nation State, International Journal of Human Rights 2012, pp. 1196 et seq.
- Smart, J. J. C.: Distributive Justice and Utilitarianism, in: Arthur, J./ Shaw, W.H. (Ed.): Justice and Economic Distribution, New Jersey 1978, pp. 103 et seq.
- Spangenberg, Joachim/ Settele, Josef: Precisely Incorrect? Monetising the Value of Ecosystem Services, Ecological Complexity 2010, pp. 327 et seq.
- Spash, Clive: Deliberative monetary valuation, Ecological Economics 2007, pp. 690 et seq.
- Starke, Peter/ Obinger, Herbert/ Castles, Francis: Convergence towards where: in what ways, if any, are welfare states becoming more similar?, JEPP 2008, pp. 975 et seq.
- Steinberg, Rudolf: Der ökologische Verfassungsstaat, Frankfurt a.M. 1998.
- Steinberg, Rudolf: Die Repräsentation des Volkes. Menschenbild und demokratisches Regierungssystem, Baden-Baden 2013.
- Stengel, Oliver: Suffizienz. Die Konsumgesellschaft in der ökologischen Krise, München 2011.
- Sterk, Wolfgang et al.: The International Climate Regime and Extraterritorial Human Rights Obligations. Status Quo and Future Prospects, Darmstadt 2013.
- Stern, Nicholas: A Blueprint for a Safer Planet: How to manage Climate Change and create a new Era of Progress and Prosperity, Cambridge 2009.
- Stern, Nicholas: Stern Review Final Report, 2006, abrufbar unter http://www.hm-treasury.gov.uk/stern_review_report.htm.
- Stern, Robert: Transcendental Arguments, in: Stanford Encyclopedia of Philosophy, 2015, <http://plato.stanford.edu/entries/transcendental-arguments/#Bib>.
- Stroud, Barry: Transcendental Arguments, Journal of Philosophy 1968, pp. 241 et seq.
- Sunstein, Cass: Cost-Benefit Analysis and the Environment, Ethics 2005, pp. 351 et seq.
- Sunstein, Cass: Laws of Fear: Beyond the Precautionary Principle, Cambridge 2009.
- Susnjar, Davor: Proportionality, Fundamental Rights, and Balance of Powers, Leiden 2010.
- Taylor, Charles: The Malaise of Modernity, Harvard 1992.
- Tomasello, Michael: A Natural History of Human Thinking, Harvard 2017.
- Unmüßig, Barbara: Monetizing Nature – Taking Precaution on a Slippery Slope, 2014, <http://us.boell.org/2014/08/26/monetizing-nature-taking-precaution-slippery-slope>
- Unnerstall, Herwig: Rechte zukünftiger Generationen, Würzburg 1999.
- Unnerstall, Herwig: Sustainable Development” as Legal Term in European Community Law: Making It Operable within the Habitats Directive and the Water Framework Directive, UFZ-

- Diskussionspapiere 16/ 2005, Leipzig 2005, http://www.ufz.de/data/ufz_disk_16_20052878.pdf.
- Vanderheiden, Steve: Environmental Rights, Abingdon 2012.
- Verheyen, Roda: Climate Change Damage and International Law: Prevention Duties and State Responsibility, Leiden 2006.
- Verheyen, Roda: Loss and Damage Due to Climate Change. International Journal of Global Warming 2015, pp. 158 et seq.
- Vieweg, Marion et al.: Squaring the Circle of Mitigation Adequacy and Equity: Options and Perspectives, UBA-Texte, Dessau-Roßlau 2014.
- Voget-Kleschin, Lieske: Sustainable Food Consumption? Claims for Sustainable Lifestyles in between Normative and Eudaimonistic Issues – the Example of Food Production and Consumption, Manuskript, Greifswald 2013.
- Voigt, Christina: Sustainable Development as a Principle of Integration in International Law. Resolving Potential Conflicts between WTO Law and Climate Change Mitigation Measures (Manuskript), Oslo 2006.
- Wagner, Liam et al.: Trading Off Global Food Supply, CO₂ Emissions and Sustainable Development, 2016, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0149406>.
- Walzer, Michael: Spheres of Justice, New York 1983.
- Walzer, Michael: Just and Unjust Wars, New York 1977.
- Wätzold, Frank: Efficiency and applicability of economic concepts dealing with environmental risk and ignorance, Ecological Economics 2000, pp. 299 et seq.
- Werner, Micha: Who Counts? Argumente zur Beantwortung der Inklusionsfrage im Rahmen der transzendentalpragmatischen Diskursethik, in: Niquet, Marcel/ Herrero, Francisco Javier/ Hanke, Michael (Ed.): Diskursethik. Grundlegungen und Anwendungen, Würzburg 2001, pp. 265 et seq.
- Winter, Gerd: Vom Nutzen der Effizienz im öffentlichen Recht, Kritische Justiz 2001, pp. 300 et seq.
- Zucca, Lorenzo: Constitutional Dilemmas. Conflicts of Fundamental Legal Rights in Europe and the USA, Oxford 2008.



Politics and Governance of Sustainability – On Climate, Energy, Agriculture and Conservation Policy Instruments with a New Focus

Abstract

On the basis of the normative theory of sustainability just laid out, effective implementation measures can be identified. In a first step, a number of promising starting points can be identified for individual and entrepreneurial action as well as for educational measures. Education, voluntary corporate social responsibility (CSR) and consumer engagement can play a role, but they cannot eliminate the need to contain capitalist economic activity and daily life through effective policy instruments, especially with regard to sustainability. Knowledge and intrinsic (self-interested or value-driven) motivation alone cannot trigger the necessary transformation. At the level of the individual person or company, it is also not possible to prescribe sufficiently precisely what each of the actors has to achieve individually. In addition, there are some general governance problems with regard to addressing single actions (such as shifting effects and rebound effects: see below).

At the political level, there has been an impressive collection of sustainability programmes and declarations on an international, EU and national level to date, although this collection is conflicting with the still large ecological footprint per capita. This also applies to the much-discussed stipulations in the UN Framework Convention on Climate Change (UNFCCC), in the Kyoto Protocol and now in the Paris Agreement, which sets a very ambitious temperature limit, but falls far short in all details of establishing instruments of implementation. The previous sustainability governance in terms of command-and-control law, information law, subsidy law, and procurement law offers a diverse picture which, overall, is not very effective measured against the ambitious (!) objectives (and only this way the effectiveness of instruments can be analysed). Keywords for severe governance problems especially with regard to sustainability include direct and indirect rebound effects (which also include wealth effects), resource-related, sectoral, and spatial shifting effects, lack of rigour, enforcement problems and problems of depictability. These governance problems can only be solved if sustainability issues are consistently understood as (mostly) quantity problems and

which require ambitious quantity limits. Thus, those need to be established as core instrument of sustainability policy.

The most promising approach of quantity governance in terms of sustainability would be a cap (and trade) approach or a similarly structured levies on central noxious agents. Given this is construed in a substantially and geographically broad way and with a clear orientation towards ambitious goals, the above-mentioned governance problems can be solved. Furthermore, the diagnosed motivational situations of citizens, companies and politicians (self-interest, conceptions or normality, etc.) can be adequately addressed – in a freedom- and democracy-friendly manner. Questions such as “certificate markets or levies”, “overall market or submarkets” or “costefficiency” are mostly overestimated, as is the question of which instruments should be labelled as economic or regulatory. The idea that the controlling effect of prices is only limited (allegedly due to price elasticity of demand) is based on several false assumptions. The existing EU emissions trading system (ETS) in the climate sector, however, solves almost none of the problems just listed, and neither do various tax approaches.

The key instrument for climate protection as well as for other environmental problems would be a strict cap on fossil fuels in line with the temperature limit in Article 2 para. 1 PA. This could be achieved by means of a completely revised emissions trading scheme that integrates all fossil fuels (instead of merely some industrial sectors) and commits to strict caps and closed loopholes. This could be started by the EU and other willing states and thus gradually removing fossil fuels from the market within two decades. For individual citizens and businesses, this would result in increasing and soon relatively massive price incentives in favour of more efficiency, more renewable resources and, as is mostly neglected, frugality (whose necessity due to the very ambitious target is typically ignored in the economic discourse). The approach could gradually be extended to a global scale. The revenues of the system would essentially contribute to financing mitigation and adaptation in the participating countries of the Global South. An important complementary instrument are border adjustments towards non-willing states for imports and exports. Shifting effects for emissions or resource consumption (and competitive disadvantages) are thus avoided, and pressure is exerted on other states to participate in the system. At the same time, the economic viability of an effective sustainability policy can be demonstrated, ultimately paving the way for later global agreements. A quantity-controlling approach can be even advantageous from the point of view of social distribution, especially on a global scale, but also with regard to social inequalities within industrialised countries. It addresses both the long-term fatal social impacts of climate change and resource depletion as well as poverty reduction in developing countries. In addition, the model favours the establishment of administrative, educational and welfare institutions in developing countries, which will probably lead to slower population growth (which, like demographic change in general, is overinflated as a cause of problems and too little recognised as their consequence). Furthermore, in the North and South, permanently available and affordable energy is secured, a global race to the bottom in terms of eco-social standards

is avoided, and positive effects on the labour market are also likely. In addition, compensation on a global scale and to a lesser extent also for the socially weaker in the industrialised countries is conceivable from the revenues of a quantity governance system. Global concepts for resource and sink problems can thus be linked to combatting poverty.

If an integrated solution is to be sought for various environmental problems (climate, biodiversity, nitrogen, phosphorus, soils, water), a rapid phasing-out of fossil fuels is key. But a cap for livestock farming is similarly important. In connection with capping fossil fuels, this would trigger far-reaching changes also in agriculture, e.g. in the direction of organic farming, pasture farming and significantly lower consumption of animal food, which would in total greatly relieve biodiversity, soils, water, nitrogen (and phosphorus) cycles and public health. Other pricing instruments are also conceivable.

In addition, in order to avoid hot spot problems and path dependencies, a number of supplementary command-and-control rules and prohibitions remain important in the area of sustainability, for example as additional tool to save biodiversity. This would, however, be more selective and, moreover, would involve stricter and more stringent regulatory law in terms of content and enforcement than is currently the case. The same applies to informational and planning instruments. In contrast, direct pricing of control variables that are difficult to grasp, such as biodiversity, is not very effective.

A sustainability policy that is pursued by a group of willing states has to assert itself against a global, borderless world economy. Cross-border free trade in particular has typical social and ecological defects and calls for regulatory containment of capitalist economic activity. This is true not only in terms of sustainability (in order to avoid shifting effects) but also in terms of democracy which is put under pressure by globalisation minimising the decisive power of domestic parliaments (legally and factually). The current state of establishing global liberal-democratic institutions is ethically and legally only partially compatible with the justification of a universal, global and intertemporal liberal-democratic law and ethics. At least, a sustainability pioneering role of some states is not prohibited under international trade law, including border adjustments for imports and exports. All in all, a categorical rejection of free market systems remains unconvincing even considering the concept of free trade.

Keywords

Politics · Sustainability governance · Energy policy · Conservation policy · Agriculture · Education · Advertising · CSR (corporate social responsibility) · Sustainable consumption · Sustainable Development Goals · Paris Agreement · Regulatory law · Planning law · Subsidies · Information · Rebound effects · Shifting effects · Enforcement deficits · Economic policy instruments · ETS (emissions trading scheme) · Climate governance · Competitiveness · Border adjustments · Land use · Phosphorus · Nitrogen · Command-and-control law · Biodiversity · Nudging · Centralised versus decentralised · Free trade · Global constitutionalisation · WTO

4.1 Sustainability Governance – Sustainability Through Education, Propaganda, and Advertising?

The problem of sustainability – especially in terms of climate change – was clearly highlighted in Chap. 1 of this book. Questions of objectives have also been discussed in detail: A different approach to freedom, to the future and to globality is the inevitable normative requirement that societies will have to face in the coming decades – and ultimately universally and on all individual, entrepreneurial, and political levels. And a reinterpretation of liberal constitutions and human rights catalogues makes it not only an ethical but also a legal framework. The relevant objectives have thus been identified, and it has already been broadly stated that a strategy based on technology – comprising consistency and efficiency – as well as a strategy oriented towards frugality would be necessary for their realisation (Chap. 1.3).

However, freedom in line with sustainability must not only be recognised as necessary, but also implemented. Because norms are supposed to solve conflicts, and justice should become real. This finding therefore calls for political implementation measures at domestic and transnational level that put objective and strategies into practice. From an ethical and legal point of view, in terms of justice “everyone” in politics, business and citizenship is committed to greater sustainability; this has been shown so far, as has the fact that all public authorities have primary responsibility for enforcing this (Chap. 3.5). This calls for a conception of a sustainability policy or sustainability governance. But such a conception presupposes a prior clarification of the degree of progress that seems possible through activities from citizens and from companies without legally binding policy instruments. In this way, a general theory emerges *en passant* on the kind of regulatory containment “capitalism” which is required in terms of sustainability. And perhaps not only in terms of sustainability – in principle, the following findings should also apply to other political objectives, provided they do not harmonise strongly with individual self-interest calculations. Such a governance approach deals with instruments, including responsibilities, actors and governance units. The core thesis of Chap. 4 will be: The most promising instrument for the integrated solution of various sustainability problems is a broadly-based objective and geographical quantity control – based on the central control variables fossil fuels and livestock.

But the initial question under the auspices of freedom is: To what extent can national and transnational public authorities expect citizens and companies to fulfil their obligations on their own and initiate the transformation process? It has already been shown (in Chap. 2.7) that an interplay of actors is needed to overcome various motivational obstacles to the transformation to sustainability. It was also shown what the prospects for happiness, justice, self-interest, etc. could be if a transition towards sustainability were seriously implemented. If one wants to examine which concrete actions or instruments must be used to implement this, some people may wonder: Is the sustainability transformation not simply a question of more education in schools, universities, adult education centres, and companies? This can mean an increased transfer of knowledge, but also of values with regard to sustainability.

Answering this question takes us back to the controversy known from the criticism of capitalism (Chap. 2.6): “Human beings are born selfish. That is unchangeable, and that is precisely what leads to good results” versus “Human beings are only made selfish by society, especially by capitalism, so we need a newly educated human being and break with the old Adam; everything is socially acquired”. Regarding this, for centuries a basic controversy of the early modern period, originally created by the philosophers Thomas Hobbes and Jean-Jacques Rousseau, has been repeated in wave movements. While Rousseau (and his follower Marx) was en vogue for many in the anti-authoritarian educational optimism of the 1970s, since the political shift to neo-liberal ideas it has been rather the theorist of self-interest Hobbes (Chap. 2.3). As we have already seen, a differentiated middle course has to be taken here (Chap. 2.4). This is not only true with regard to behavioural analysis, but also in terms of defining opportunities and limits of education as an instrument of transformation.

Despite all limits to the relevance of knowledge and values and despite the limited human altruism, education can start at these points – and by showing that sustainability can often promote short-term self-interest. But how effective are such non-regulatory approaches if measured, for example, against the temperature limit of 1.5–1.8 degrees in Article 2 para. 1 PA or against the requirement in the CBD to reverse biodiversity loss? The effectiveness of instruments can only be meaningfully determined on the basis of objectives (Chap. 1.7). This determination is made in Chap. 4, in addition to direct empirical experiences, above all with regard to behavioural findings relating to sustainability (Chap. 2).

Ultimately, one can hardly hope that education could essentially break through blockades in emotions, conceptions of normality or long-term self-interest through classical pedagogical measures. How, for example, could climate change be approached in a way that people are inspired by the visible success of their personal efforts? I can hardly imagine a piece of global climate that I have successfully protected personally by not taking my car to work today. All this is all the more true in face of drastic challenges such as the necessary full phase-out of fossil fuels in just a few years’ time.

The same as for education also goes for advertising or even propaganda. Sometimes, one hears the hope that the public authorities would only have to advertise sustainability properly – and at the same time restrict advertising for unsustainable lifestyles in order to achieve sustainability. Surely this factor is relevant. But it has already been shown that information and values cannot serve as the central basis for transformation (Chaps. 2.2 and 4.4.1). Nevertheless, the role of advertising, propaganda, and also the media is often overestimated, even though they are of course also involved in the interplay of the actors and thus in the success or failure of change. Under the conditions of an open society, the above-mentioned factors depend on the resonance from their respective clientele. Therefore, they have greatest influence mainly when they tie in with already existing self-interest calculations, conceptions of normality, and emotions, etc. of large population groups. But that brings us back to all of us. In the history of socialism, even in the extreme case that totalitarian means of power are available, one can observe that it

would be not only illiberal but also ecologically ineffective to hope for a kind of “propaganda”. Even under such conditions, people are only influenced in favour of things for which a certain affinity already exists. This is only the case to a very limited extent when it comes to sustainability issues – or even the desire for a new, altruistic type of person. In the light of the behavioural analysis (in Chap. 2) one will probably have to say: Propaganda against some minority as scapegoat works better than propaganda for some diffuse universal love of humankind; this is normatively worthy of criticism, but not too difficult to explain descriptively (Ekaradt 2017).

Again, information, values, and therefore also propaganda and advertising do partly matter. And it is of course true that any change in self-interest calculations, values, conceptions of normality, etc. would have to be conveyed in the process of socialising young people in the future. However, this goes far beyond the educational system and advertising; and it equally affects older people, if only because the young are socialised into their world and their actions are far more influential than their possibly nice pedagogical speeches. *In a nutshell: The issue of education, information and propaganda is overestimated.*

4.2 How Much Containment Does Capitalism Need – Sustainability Through CSR and Sustainable Consumption?

This chapter will focus on the extent to which a sustainability transition can be expected to the required extent (!) solely or primarily from the voluntary initiative of civil society, consumers and companies. First of all, it is undisputed that entrepreneurial, civil society and private action on sustainability can be found everywhere and that the aforementioned interplay of many actors is indispensable due to their mutual influence – also political change will require citizens etc. to engage for that (Chap. 2.7). Likewise, the potentials for justice, happiness and, in part, self-interest have already been identified that makes it empirically at least somewhat plausible that people engage voluntarily in terms of more sustainability. But how effective are such non-regulatory developments compared to the objectives in Article 2 PA, the CBD and human rights (Chaps. 1.2 and 3.8)? The effectiveness of instruments can only be meaningfully assessed on the basis of objectives (Chap. 1.7). This assessment is made in Chap. 4.4.1 above all with regard to behavioural findings in relation to sustainability (Chap. 2), but also by taking direct empirical experiences into account.

Why Corporate Social Responsibility and Sustainable Consumption Are Overrated

Some people in politics, science, and society assume that sustainability will be sufficiently promoted by companies and perhaps also consumers already without political regulation – especially due to self-benefit calculations. If this were the case, the conflict in terms of human rights between economic and consumer freedom on the

one hand and elementary preconditions of freedom would indeed not require regulation.

It is undeniable that companies might have some business advantages by considering sustainability issues or corporate social responsibility (CSR). Consumers also have a multitude of personal options for action, which at times can save money, or, at times, promote happiness, but in any case can satisfy the desire for value-oriented action, if one thinks of options such as renouncing a car, holiday flights, and lots of animal food, changing the electricity supplier, or buying organic, regional and seasonal food. It is obvious that a voluntarily different behavior (and choice of other technical options) in nutrition, mobility and so on would be very helpful for sustainability. The question, however, is how far this will take us (on the following Ekardt 2016a, § 6 B.).

Hoping alone or above all for such voluntary actions on the part of citizens and companies lies within the framework of a general tendency towards free competition and the somewhat democratic idea that citizens themselves should “vote” on the desired level of environmental protection, for example by making a purchase decision (on the competition topos and CSR: Müller 2014, pp. 29 et seq.; Davidson 2009; Becker 2009; Friedman 1962; Sinn 2003; cautious Rodrik 2012; Krugman 1979; classical on competition Ricardo 1817; critical Scheidler 2015, pp. 173 et seq.; vague IASS 2011). However, voluntary action by individuals and companies cannot replace the supplementary regulatory containment of individual and entrepreneurial action, especially when it comes to sustainability.

Especially, the concrete motivational factors against sustainability are too strong to rely on self-regulation, as we saw in detail in the course of this book (Chap. 2). E.g. the problems of collective goods and path dependencies, which make it very often difficult for individuals to take action than for individuals to act collectively, show that a distinct regulation that applies to all people is helpful. Of course, companies will often become “somewhat” active in terms of sustainability, not least for reasons of self-interest. However, it is extremely unlikely that zero emissions in two decades or similar environmental targets will be achieved if left to that, especially as targets like these also require frugality (Chap. 1.3). This required extent of the challenge is often overlooked when talking about CSR or instruments in general – but it has been demonstrated several times above that the effectiveness of an instrument cannot be assessed without reference to the goal (ignored e.g. by Müller 2014, pp. 29 et seq.; Davidson 2009; Becker 2009).

In the case of companies, it is a particularly important challenge for self-regulation that they have to assert themselves on the market and that voluntary commitment – if it assumes a large scale – can fail because the company is then threatened with bankruptcy. It is therefore often more probable that companies will lower sustainability standards out of short-term business cost savings and possibly start a race for the lowest standards on a transnational level, especially since companies can often threaten politicians to relocate to another country. Of course, because of its reputation, a company wants to prevent major chemical accidents with liability consequences and negative public attention. In contrast, there is less focus on whether the global climate is being damaged, since the consequences and causalities are less obvious, especially as future generations have no voice on the

market due to a lack of purchasing power. In addition, complex value chains are difficult for all involved to survey, and the variety of possible information can become unmanageable.

In addition, if one relies on corporate responsibility and consumer democracy, this ultimately involves the problematic core idea that companies and consumers can continue their growth-oriented consumption and production styles unchanged (see as an example Sukhdev 2012). The only requirement is that the individual products must gradually improve their resource or environmental balance. After all, the driving force behind this is the interest in buying and selling more products and more services. But as shown, this purely (!) technological path to sustainability is not enough (Chap. 1.3). Technically smarter flying and driving – and more and more of it at the same time – simply does not work in terms of sustainability. Further challenges for self-regulations may occur because it neglects the character of sustainability issues as quantity problems (see in detail Chap. 4.4.4).

It is also doubtful how the key challenge of ethics and law, i.e. the balancing of conflicting spheres of freedom, can be resolved in a meaningful way by addressing individual citizens and businesses. For example, if ambitious climate protection requires not only marginal changes, but rethinking the entire Western consumption model: What is then required of the individual company? To produce no more big cars, but only bicycles and a few 1-liter cars? And to do this within 2 days – or 2 years – or when? To then go bankrupt and let other companies produce the cars instead? And how much must I contribute as an individual consumer in relation to others, and when? This requires overall decisions in terms of quantities, i.e. political and not just individual decisions.

All this does not deny the essential role of companies and citizens – as long as they are involved in the interplay to establish governance instruments of the public authorities (on the interplay of different actors see in detail Chap. 2.7). Similarly, there is no dispute that entrepreneurial competition can have sustainability-related positive effects. After all, competition generates cost pressure and can thus encourage more efficient use of energy and resources – while still leaving a great deal of freedom to companies and consumers. But the limits to competition have to be taken into account as well. Competition can, for example, ensure low-resource power generation through price pressure. But since more or less everyone in a market naturally wants to sell as much as possible, it cannot reduce the overall consumption of energy and materials. For example, competition in the electricity market makes energy generation more efficient. At the same time, however, competition is making energy cheaper as a result of cost pressure on energy producers, which promotes increased consumption.

Another “Soft” Instrument: Why Participation Is Often Overestimated

Another “soft” sustainability instrument could be to increasingly rely on citizen participation as a governance instrument for the effective implementation of

sustainability (beside the normative necessity of procedural elements: Chaps. 3.5, 3.6 and 3.7). This means e.g. not restricting the use of fossil fuels in terms of content through regulatory law, levies, etc., but also not waiting solely for self-regulation and consumer decisions, but broadening public participation in planning procedures for coal-fired power plants etc. – or allowing plebiscites to a greater extent than is the case in most liberal democracies. Such a strategy, due to its immanent scope for voluntary action of the citizens also shows problems (Ekardt et al. 2012; Steinberg 2013; too optimistic Lee and Abbot 2003; see also Schwerdtfeger 2015):

- First of all, the governance problems known from self-regulation are repeated: The motivation for sustainability of all parties involved is less intensive than often assumed – and the concretisation of sustainability on the level of individual actors does not work. Further challenges for self-regulations may occur because it neglects the character of sustainability issues as quantity problems (see in detail Chap. 4.4.4).
- With regard to human motivation, participation processes (or plebiscites) still have further problems as a governance instrument. Especially, there is often a rather limited interest in early and thorough participation in administrative or even legislative procedures. In sociological and communication science terms, there is a growing tendency, at best, to get involved only when a project “gets in the way” (Bussemer 2011). Furthermore, the real bargaining power of big corporations is clearly superior to that of consumer or environmental associations. In particular, for capacity reasons, environmental associations can only participate in a few procedures, just as environmental and health interests are usually less easy to organise than industrial interests; moreover, for financial reasons, they have fewer experts. In addition, the high discursivity and constant openness presupposed in participation lead to the frictions of (post-)modern societies: Openness and discursivity favour freedom and knowledge, but can at the same time lead to indifference towards the constantly growing flow of information and opinion – especially in the digital age (see also Ekardt 2017; Bussemer 2011).
- Many see participation not as an instrument of sustainability anyway, but as an instrument for obtaining acceptance, i.e. as an attempt to silence critical voices through an allegedly open discourse. This currently very popular perspective has little to do with the search for effective sustainability instruments. Besides, it is paradoxical in itself. Genuine participation requires early participation and openness of options. If participation is only a question of obtaining factual acceptance for solutions that are ultimately fixed, then it is precisely this acceptance that is likely to be missing and at the same time the sense of participation gets lost. This also means that participation cannot be “used” to achieve a result desired from the outset.

For all these reasons, participation rights and procedural rules in general are an important instrument for sustainability and not only a normative principle of liberal democracies (Getliffe 2002; Ekardt et al. 2012), as is the voluntary activity of companies and citizens. But they cannot replace a distinct political regulation.

More generally, this section shows that the market and “capitalism” need to be framed. Moreover, the market has always historically only come about through state regulation (Scheidler 2015). Having said this, a formal state-market dichotomy makes little sense, since even economic governance instruments such as certificate markets or levies, to which the investigation will turn in detail later (in Chaps. 4.5 and 4.6), are centrally based on public law rules (Ekardt et al. 2015).

To sum up: Sustainability governance cannot primarily rely on voluntarism, self-regulation or mere procedural rules. The goals are too ambitious, the motivational situation too weak and the concretisation of what has to happen too difficult. But citizens (respectively consumers) and companies are still very important, since political regulation also requires an interplay of actors, including, politicians, citizens, companies, etc. Without citizens that try to consume different and (!) engage for political change, the transformation towards sustainability will not work. A chicken-and-egg game of who is to blame in such a ping-pong remains pointless (Chap. 2.7).

4.3 Political Objectives, Programmes, Sustainable Development Goals – And the International Framework of Climate Policy Up to the Paris Agreement

After the factor education (and advertising) and the hope for independent action of enterprises (CSR) and citizens, political programmes and similar approaches (national or transnational) are now coming into focus. Given that these programmes deliver legally binding objectives, they can concretise human-rights-based sustainability requirements as a result of legislative balancing (Chap. 3.5). On the other hand, one can raise the question whether objectives and other programmatic – typically non-binding – statements such as action plans can function as governance instruments. Since targets or programmes in general do not require specific actions of individual citizens, they could be seen as a rather weak kind of governance instrument. As an example, this is discussed in the following, especially with regard to climate protection.

Oversupply of Political Programmes – Including the SDGs

It has already been mentioned how popular – at a purely verbal level – the issue of sustainability is. All political structures, e.g. the EU institutions and national governments and parties, are outdoing each other in terms of their constant statements of objectives, strategies and programmes, so that it is even difficult to keep a reasonable overview in this regard (Krüger 2016; Ekardt 2016a, § 6 C.). Objectives of a general nature – and often of a particularly ambitious nature – are center of numerous international legal documents. Agenda 21 has already been discussed, pars pro toto for the many non-binding international legal documents with a general sustainability goal (Chap. 3.2). And under the auspices of the UN

Convention on Biological Diversity (CBD), far-reaching goals were agreed to stop and reverse the current trend of biodiversity loss (Chap. 1.2).

The Sustainable Development Goals, which were announced at the UN General Assembly in the autumn of 2015 and which are clearly non-binding under international law, have a similar rhetoric (see Chap. 1.5). The 17 general objectives and 169 concretised objectives follow the gesture typical of international law of proclaiming far-reaching objectives that are difficult to reconcile. For example, growth and environmental protection requirements can be found side by side without reconciliation. However, the SDGs can obviously not replace concrete and legally binding regulatory measures. From a governance perspective it is not the programmes that trigger change for the public, but the real political measures.

Legally Binding, But of More Programmatic Content: UNFCCC and Kyoto Protocol

The most detailed overall programmes and objectives are those for climate protection, as we already mentioned (Chap. 1.2). They even have a legally binding character, although with many vaguenesses, as we will see in the following. The UN Framework Convention on Climate Change (UNFCCC) provides the general framework for climate protection policy at the international level. The UNFCCC was adopted at the World Summit on Environment and Development in Rio de Janeiro in 1992 and has been ratified by almost all states worldwide (on the steps of development of international climate law Lyster 2007; Ekardt et al. 2009a; Morgenstern 2009; Platjouw 2009; Sands and Peel 2018; Spence et al. 2008). In Article 2 of the UNFCCC, it contains the legally binding objective of stabilising the concentration of greenhouse gases in the atmosphere at such a level that no dangerous disturbances occur. Beyond this, the UNFCCC does not set any concrete reduction targets, but Article 3 of the UNFCCC lays down essential principles of climate protection such as precautionary measures and joint but differentiated responsibilities of industrialised and developing countries that were already mentioned (see Chap. 3.8). In addition, it obliges listed Parties to document and limit their emissions (Article 4 UNFCCC), but without setting quantified targets. UNFCCC Annex I lists those industrialised and transition countries (former planned economies) that have committed themselves in 1992, among other things, to promoting national policies and measures to reduce emissions (so-called Annex I countries). The UNFCCC provides the framework for negotiations at the annual climate conferences, which take place as the Conference of the Parties to the Convention (COP).

The Kyoto Protocol (KP; cf. Brander 2003; Sands and Peel 2018; Ekardt 2016a), which was drawn up by the COP of the UNFCCC in 1997 and came into effect on 16 February 2005, contains quantified emission reduction targets for industrialised countries. It was, however, inadequate in many respects. After all, it only obliged a small group of industrialised countries to little ambitious objectives.

Paris Agreement: Weak in the Details, Extremely Ambitious in Its Objective in Article 2 Para. 1

Most recently, states around the world agreed on a new global climate protection agreement as a follow-up to the KP: the Paris Agreement. Everywhere, the Paris Agreement is celebrated (in more detail to the Paris Agreement Ekardt and Wieding 2016a, b, pp. 36 et seq.; Ekardt et al. 2018a; Fuhr et al. 2016; Obergassel et al. 2016). From 2020, all countries will be forced to do more in terms of climate protection. The main responsibility, but anymore not the sole responsibility, is supposed to remain with the industrialised countries. As we discussed earlier (in Chap. 1.2), the Paris Agreement stipulates that global warming must be limited at least to well below 2 °C, but better 1.5 °C – in view of the threat of consequential damage – as the object of government efforts. This needs to be explained in more detail. It will then become clear that (not only human rights – see Chap. 3.8 – but also) Article 2 para. 1 PA precludes tricks such as moderate probabilities, incomplete counting of emissions, overshoot and geo-engineering. This renders the IPCC's previous perspective problematic (for the empirical basis, see Chap. 1.2 and once again IPCC 2018).

“Well below” requires a legal interpretation. It mentions “clearly” less than 2 degrees, but at the same time more than 1.5 degrees. It therefore suggests about 1.7 or 1.8 degrees as the temperature limit. Furthermore, the aspect that “efforts” must be made towards the 1.5-degree limit cannot legally mean that this objective can simply be given up. Rather, measures must actually be taken that promise further reductions compared to a limit of 1.7 or 1.8 degrees. Furthermore, Article 3 PA contains a clear legal obligation that the states are to meet the objective in Article 2 PA by increasing their level of ambition over time. Therefore, Article 2 PA and the 1.5-degree limit are clearly legally binding. In terms of content, a statement is thus made that differs from the 2-degree limit, which has been the subject of most discussion in the negotiations and in public so far. This has largely gone unnoticed so far, but has potentially drastic consequences, as has already been shown, because it implies a short-term phase-out of fossil fuels and a significant reduction in animal husbandry – which cannot be done exclusively through technical strategies (Chaps. 1.2, 1.3, and 4.9).

Admittedly, pursuant to the often-quoted Article 4 para. 1 PA, states only “intend” to reach the peak of emissions as soon as possible and to achieve the complete neutralisation of their emissions within the second half of the twenty-first century. But while this statement is vaguely formulated (and could also technically lead astray; more on this below), the temperature limit in Article 2 PA is unconditionally articulated and put in more concrete terms (see in more detail Ekardt et al. 2018a). Article 2 para. 1 PA therefore takes precedence before Article 4 para. 1 PA. From the perspective of systematic interpretation of the norms, this is also correct because only the orientation on Article 2 para. 1 PA (instead of Article 4 para. 1 PA) ensures compliance with Article 2 UNFCCC and human rights (Chap. 3.8).

The legally binding rationale of Article 2 PA stands in a stark contrast to what the individual states are specifically obliged to do by the Paris Agreement. Since the

failed Copenhagen climate conference in 2009, the negotiation process had moved towards voluntary commitment, as this seemed the only way to bridge the consensus, which is required under international law, among the participating states with their widely differing tendencies. The result on the concrete national targets can be found in Article 4 para. 2–19 PA. Each signatory state freely sets its own emission targets, without more specific requirements. Consequently, even during the Paris conference there was no doubt that the existing emission reduction plans of the states would by no means be sufficient to achieve the ambitious Article 2 PA. Many national contributions are formulated in a way that they depend on adequate financial support from other countries – which is hardly in sight yet –, or are unlikely to be implemented for other reasons. For those cases, the agreement does not at any point provide for sanctions if the national emission reduction plans are not fully implemented. This is exacerbated by Article 13 PA which makes not only the requirements but also the measurement of emissions largely unclear: Although a transparency mechanism is to be established with regard to the emissions, it should be respectful, non-punitive and non-intrusive towards the states and their sovereignty and, moreover, respect the specific conditions of the countries. This has little to do with transparency in the traditional sense.

Thus, the vagueness of the detailed objectives of the Paris Agreement contrasts with the clear and legally binding global temperature limit set out in Article 2 para. 1 PA. Since Article 2 PA is legally binding, it requires a 1.5-degree limit (in contrast to the recommendations in IPCC 2018) with a high probability of achievement and without overshoot; the flaws of the IPCC's perspective which considers a moderate probability etc. sufficient have been analysed earlier in this book (Chap. 1.2). This is incompatible with the binding character of the norm. It has also already been shown that this ambitious interpretation of the obligation is also borne by precautionary-oriented human rights (Chap. 3.8). Article 2 para. 1 PA therefore states in particular that the reviews of the national reduction plans should be regarded as contoured on the basis of that global temperature limit (Ekardt et al. 2018a; overlooked by Sands and Peel 2018).

One issue has to be added. Despite the problematic role of fossil fuels, neither Article 2 para. 1, nor Article 4 para. 1 PA explicitly contain a literal statement regarding the phase-out of fossil fuels in electricity, heating, transportation, plastics and mineral fertilizers in favour of renewable energy, energy efficiency and frugality. The statement to neutralise emissions which is made in the Articles, at first sight, could also mean to employ geo-engineering, instead of phasing-out petroleum, gas and coal. Geo-engineering refers to interventions in the atmosphere or the oceans (or storing sequestered carbon dioxide underground, e.g. from coal power plants), in order to reduce solar radiation or increase the storage capacity for greenhouse gases. But, at latest when those options prove to be impossible to implement (Chap. 1.3), a phase-out of fossil fuels and the transition to 100% renewable energy, increased energy efficiency and maybe even frugality will become imperative (as well as directly available compensation measures like rewetting dried wetlands to neutralise emissions which will remain even after the complete phase-out of fossil fuels). All timelines indicated by Article 2 para. 1 PA

suggest this. Respective technologies are currently not ready for the market – which is why the discussion about possible high costs and risks (and their compatibility with Article 2 para. 1 PA, the precautionary principle and human rights) is as of now rendered unnecessary for the most part (on the technological controversy on negative emissions see Chap. 1.3).

Since the Paris Agreement is more of a determination of objectives, some of its further statements are to be briefly sketched here (see in detail Ekardt and Wieding 2016a). Just as vague as in the case of domestic targets, the less industrialised countries are promised help with climate protection and adaptation to climate change, which in some cases can no longer be prevented. There may even be compensation for the consequential damage caused by climate change. However, concrete sums are not legally fixed. And the non-binding amounts notified remain far below what is required according to the analysis in this book (see Chap. 3.8).

The programmes and other objective-based frameworks (both national and transnational) presented as examples in this section have one thing in common: they do not contain any concrete regulation of human behaviour in terms of a real implementation of sustainability. This even applies to international treaties. They are, however, important as confirmation and, if necessary, concretisation of the human-rights-based sustainability obligations. And they are much more ambitious than is usually assumed, especially the Paris Agreement. Nevertheless, the debate on concrete policy instruments remains necessary.

4.4 The Classic Approach to Policy Instruments: Regulatory Law, Planning Law, Subsidies, Information – And Basic Regulation Problems (Rebound, Shifting, etc.)

In this chapter, the focus will be set on classic policy instruments and the question of what they contribute to climate protection and resource conservation. In particular, regulatory law respectively command-and-control law must be analysed here. At the same time, this analysis is used to explain some fundamental issues affecting the impact of governance instruments. Methodologically (Chap. 1.7), they result both from direct empirical findings and from derivations from behavioural insights (Chap. 2). The example is, as in the chapters on governance in this book in general, primarily the field of energy and climate. This area is very important and therefore regulated particularly intensively. In addition, the focus on fossil fuels that is implied in a climate governance analysis means that the entire sustainability policy can be best understood (Chap. 1.2).

The Classic Mix of Instruments in Sustainability Governance

The traditional sustainability strategies in the sectors of electricity, heat, fuel and material uses such as agriculture are approaches focusing on consistency and efficiency (on the strategies in general see Chap. 1.3). At its core, command-and-control

governance instruments promoting these strategies are applied to products, industrial and power generation plants or buildings in many countries (on the following von Bredow 2013, pp. 131 et seq.; Ekardt et al. 2015; von Weizsäcker 2010; Krüger 2016; Ekardt 2016a). The classic mix of instruments also contains subsidies, informational instruments and planning law. Regional action is considered separately at the end of this section (on planning see in more detail Chap. 4.10; on the limited role of information and other soft instruments see already Chaps. 4.4.1 and 4.4.2).

For example in the EU, energy and climate policies have been aiming to bring energy sources other than fossil fuels onto the market, to use energy more efficiently and to thus cut greenhouse gas emissions. The EU has also established general targets for greater energy efficiency and more renewable energies. Consequently, over the years, an increasingly broad regulatory network has emerged that even politicians, parliamentarians and lawyers often cannot oversee in detail anymore. It goes beyond the scope of this book to systematically analyse this here in all details (von Bredow 2013, pp. 131 et seq.; Ekardt et al. 2015). Politics in many countries has recently enacted an impressive array of command-and-control acts of parliament, in particular to reduce greenhouse gas emissions.

For instance, an improved EU regulation for buildings was also pushed forward in order to promote thermal insulation, as buildings alone account for about one third of the EU's greenhouse gas emissions. In Germany, there is also a Renewable Energies Heat Act which stipulates a proportionate obligation to use renewable energies for heating in new buildings. The construction of power lines has also been facilitated in order to provide a stronger grid to compensate for fluctuating production of renewable energies. Since the 1990s there have also been increasing electricity and mineral oil taxes in all the EU, which are intended to make electricity and fuel more expensive and consequently more efficient to use. In addition, regulations were made for more efficient cars and household appliances. There are also numerous subsidy programmes to that effect. All this was fostered by the energy transition especially in Germany after Fukushima 2011 (albeit not fundamentally). Also, for information purposes, the number of labels for energy-efficient appliances in the EU is increasing.

The funding of renewable electricity plays a particularly controversial role and is therefore dealt with separately later in this section. But the best-known instrument for reducing emissions is the Emissions Trading Scheme (ETS). Cap-and-trade schemes are intended to gradually set emission reduction targets over certain periods of time, making it as easy and as cheap as possible for companies to implement them. It is dealt with in more detail in the chapter economic instruments – in short, the existing EU ETS has so far been relatively ineffective, but could have a resounding effect if it were to be structured differently (Chaps. 4.5 and 4.6).

The large number of measures has not really changed the large ecological footprint, especially in the industrialised countries, to the extent that emissions do not continue to rise despite rising prosperity (see Chap. 1.2). This is also due to the fact that in most countries unsustainable behaviour is still contradictorily being subsidised by the state, especially regarding fossil fuels in housing, mobility, and agriculture (IMF 2015; Global Commission 2015; World Energy Outlook 2015,

Russell-Smith et al. 2015; Ekardt 2016a). In addition to explicit subsidies, this often takes the form of tax reductions, e.g. with regard to mining. At the global level, too, loans from the World Bank and the International Monetary Fund, for example in favour of large fossil-fuel power plants, can act as problematic subsidies (IMF 2015).

Particularly striking are the EU agricultural subsidies that mainly promote conventional agriculture and a high proportion of animal products, which both represent key problems for climate change, biodiversity loss, soil degradation, water pollution and disturbed nitrogen and phosphorus cycles (Hennig 2017; Garske 2016). The current state of the subsidy regime of the European Common Agricultural Policy (CAP) was introduced by the 2013 reform and is intended to make the European agricultural sector more environmentally friendly by linking the direct payments to farmers more closely to environmental services. However, the minor changes are still by no means sufficient for achieving the climate objectives of Article 2 para. PA, stopping of the loss of biodiversity or other environmental objectives (in detail Garske 2016).

In the transport sector (IMF 2015; Kieckhäfer et al. 2015) there are just as many examples of counterproductive subsidies, for example in the form of the tax privilege for company cars (which encourages car mobility as well as large cars), the commuters' flat tax (which promotes transport energy consumption and landscape consumption), the tax exemption for aviation fuel as well as other air traffic subsidies for new airports, tax-privileged bonus miles etc. Subsidies are even higher if the non-allocation of the damages caused to society is taken into account. Even if environmental damage cannot be monetarised in its entirety (Chap. 3.8), monetarisable damage such as from climate change or the costs of the health care system as a result of fossil-fuels-related air pollution are highly relevant.

Ecological Subsidies – Electricity Generated from Renewable Sources

However, there are also examples of environmentally beneficial subsidies. In Germany and many other countries, the promotion of renewable energies is particularly strongly discussed in terms of subsidy incentives, almost exclusively in the electricity sector. The background to this support is that some renewable energies are still in the development phase and are therefore sometimes more expensive than fossil energies (although not in terms of national economies: Chap. 1.4). For a long time, the feed-in model was the most widespread one (on the various approaches see OPTRES 2007; Altrock 2010; Hennig 2017; Reiche et al. 2005; Ekardt 2016a; Ekardt and Wieding 2019). A fixed, attractive price for the electricity is guaranteed and linked to a purchase obligation by the grid operators. On the other hand, in the tendering model a certain amount of renewable energy is put out to tender by the state and by auction the bid is awarded to the cheapest bidder (see in detail Ekardt

and Wieding 2019). The idea behind both models is to make investments more attractive.

Not for heat and fuel, but at least in the electricity market, e.g. Germany now has around one third share of renewable energies. It is rarely noticed that this does not simultaneously remove fossil energies from the market (and the instruments that should do this, such as the previously mentioned EU ETS, do not do so either due to their weak specifications: see Chap. 4.5). The feed-in scheme does not contribute much to energy efficiency in the electricity sector either. Recently, Germany and the EU have started switching from feed-in tariffs to a tendering model. However, this is not necessarily cheaper than feed-in tariffs, despite the competitive and thus potentially cost-cutting element: the bidders in the tenders carry a higher refinancing risk than in the case of fixed tariffs, which translates into corresponding risk surcharges (Ekardt and Wieding 2019).

Regardless of the question of ecological effectiveness, the promotion of renewable energies has long been criticised for being too expensive: because the costs of the feed-in tariff are borne by the electricity consumers through a levy. Economically, however, this criticism is wrong, at least if the avoided climate damage is taken into account (see Chap. 1.4; for the social distribution issues of climate policy, see Chap. 4.7). The only real controversy is whether renewables-promoting schemes alongside an emissions trading scheme make sense (SRU 2011; Hennig 2017; Ekardt 2016a, § 6 E. V. 1.; Krüger 2016). Since existing emissions trading provides a limitation of greenhouse gas quantities including power plants, many fear that implementing other schemes will lead to a double promotion of renewable energies without any additional ecological effect. On the other hand, the ETS alone may face the problem that it does not sufficiently stimulate technological innovation, as it rewards obvious, but not necessarily very innovative, technical solutions directly depending on price levels. However, the ETS will still be discussed extensively later, including a fundamental reform that makes separate support for renewable energies appear doubtful indeed.

The problem of grids and electricity storage systems, which are indispensable for a renewable-based energy economy, since wind and sun are not always available, will be discussed separately (in Chap. 4.10). All in all, the result is always the same: More or less every population of any state in this world is more or less far away from the objective from Article 2 para. 1 PA (this is especially true for industrialised countries and the upper classes in the newly industrialising countries). This alone clearly indicates that something went fundamentally wrong with sustainability governance up to now.

Levels of Statehood: Special Role of Municipalities and Regions – Especially in Planning Law

Political and legal actors in the energy and climate change process are also the regions or federal states – and the municipalities (see in detail Ekardt and Hennig 2014; Hehn 2015; see also Napoli 2013). Regional and municipal action cannot

adequately replace political and legal action at higher political levels, because the federal state and even more its municipalities have no legal competence for many areas, since the key competences lie (in Europe) with the EU and sometimes with the national parliaments. In addition, if climate action is only implemented regionally, there are risks of shifting effects in that resource use and emissions “move” to other geographical areas or other areas of life (for details, see the end of this chapter). Nevertheless, state and local politics are also important in the context of the interplay of the actors (Chap. 2.7), as they can provide impulses, serve as flagship regions for new instruments and provide valuable complementary regulation.

Municipalities can convert 100% of their (as far as still existing) public utilities for electricity and heat to renewable energies, initiate model projects in energetic building refurbishment, promote public transport as well as pedestrian and cycle traffic in urban planning and limit motorised individual traffic through speed limits, parking space management and more. Other aspects include making food in local institutions more sustainable and regional and encouraging citizens to set up energy cooperatives. The regions and federal states also have options (see Ekardt et al. 2015; Ekardt and Hennig 2014; Hehn 2015). They can give priority to rail, bus, tram, bicycle and pedestrian transport in transport policy and concentrate road construction resources on maintenance rather than new construction. This also includes strengthening car-sharing and the use of innovative modes of transport such as trolleybuses. In terms of spatial planning, they can create the conditions for ensuring that the construction of renewable energy plants, such as wind turbines, does not fail due to conflicts with other land uses. It is also possible to concentrate the state funding policy for companies, settlements and buildings on sustainability-related exemplary activities. It is also important for the federal states and local authorities to ensure that state enterprises, public buildings and the public vehicle fleet are consistently and promptly oriented towards being a role-model in terms of sustainability.

The practice of most municipalities, although there are always individual approaches, remains to lack far behind, because local planning law typically offers planning options and not duties (also) in terms of sustainability, as has been shown for the three German cities of Leipzig, Dresden and Chemnitz (Ekardt and Hennig 2014). However, with regional or sectoral approaches, there are even more fundamental problems. The analysis now turns to include those problems that explain why sustainability governance does not meet the objectives e.g. from Article 2 PA. Notabene: The motivational analysis of politicians, citizens, managers, etc. (in Chap. 2) already explains why more or less “nobody” really cares for meaningful sustainability. Nevertheless, there is a need to explain why the impressive quantity of governance instruments implemented so far is so unsuccessful. This takes us to the question of governance problems – and it is precisely motivational analysis that makes the very existence of governance problems very plausible (on methodology see earlier in Chap. 1.7).

Fundamental Governance Problems, Without Solving of Which There Can Be No Effective Sustainability Policy

We have seen by now: The effect of the existing domestic and transnational sustainability instruments has been limited so far. As seen, sustainability governance and (also) energy and climate protection law typically work with specifications for individual products, facilities or activities, such as cars, buildings or at any rate individual areas of life, which are determined and possibly sanctioned in the event of non-compliance. Modern resource and sink problems, however, are ultimately about a quantity problem. This means: As a general rule, environmental problems are less relevant to individual exposures than to the total quantity of exposures or a specific total extraction of resources. This is particularly evident in the case of climate change, and it is also true in the case of the finite nature of natural resources. Other examples are biodiversity loss, pollutants, radiation or noise, in all of which the total amount of intervention is of central importance – in addition to the local pollution that may be relevant there (unlike in the case of the climate).

As we will still see (in Chap. 4.10), especially local hot spots are a well suited for partial command-and-control regulation. On the other hand, the quantitative nature of problems, if largely ignored as in previous practice and discourses, leads to some governance problems. Those problems cannot be solved by instruments that are oriented towards individual products, individual plants or also towards individual subject areas or limited geographical areas, which is the case especially for command-and-control law. It is important that the same problems also exist with voluntary activities by companies, i.e. self-regulation, and ultimately with voluntary activities by consumers as discussed earlier (in Chaps. 4.4.1 and 4.4.2; on the following Hennig 2017; Ekardt 2016a; von Bredow 2013; mostly overlooked in the current debate, e.g. by Bernauer and Schaffer 2010; Biermann et al. 2009):

1. An effective instrumental approach to sustainability (or for other policy objectives) must be adequate in terms of the rigour of the content of the objective pursued. However, the typical sustainability instruments are currently not geared to zero emissions by the end of the 2020s or 2030s in accordance with Article 2 para. 1 PA and its human rights basis (Chap. 3.8) and will therefore inevitably miss their target. This is exemplified in climate policy by the fact that essential areas such as nutrition, building heat from old buildings or transport are hardly regulated – neither in terms of the use of renewable energies nor in terms of energy efficiency or even frugality. The current law focuses on bringing renewable energies into the electricity market, and this was not that badly done in many countries. However, the other areas beyond electricity and the overall increase in efficiency and frugality are neglected. The results are stabile, instead of drastically decreasing per-capita emissions. Cum grano salis the same applies to other resource and sink issues. Current policy instruments do not consistently address, for example, the loss of biodiversity, soil degradation, etc. in a way that the damaging factors are clearly eliminated (see in more detail Chaps. 4.9 and 4.10).

2. An effective sustainability governance must also be effectively enforced. In this respect, too, the results of previous sustainability efforts reveal severe problems. Not all legal requirements are observed in practice e.g. in the EU (see in detail Ekardt 2001; Ekardt 2016a). For example, thermal insulation specifications for new buildings, are often not consistently implemented by building owners and contractors. The area of nature conservation is also vivid, in which a comprehensive set of regulatory instruments for compensating natural interventions work rather poorly in practice (Ekardt 2001).
3. Regulations and efforts relating to single sectors or individual aspects of sustainability (whether federal laws, municipal measures, individual or even entrepreneurial action) run the risk of (a) sectoral, (b) resource-related and (c) spatial shifting effects on the production or consumption side, whereby only spatial shifting effects are usually addressed in the literature as “leakage” (Schmidt-Bleek 2014, pp. 80 et seq.; Santarius 2015, pp. 185 et seq.; von Bredow 2013, pp. 125 f.; for the typical sectoral perspective Aasrud et al. 2010). As a result of political measures, the use of resources or emissions is shifted from the companies and citizens concerned to other areas of life or other places, or other resources are used all the more intensively (on the relation of this to globalization see in detail Chap. 4.11 and Rodrik 2012; Radermacher and Beyers 2011; Ekardt and Schmeichel 2009; Elliot 1998). All these relocations are also possible not only as a direct reaction to political measures, but as processes that run partially independently of them, but are ecologically just as dysfunctional (weak leakage). In the case of the conversion from fossil fuels to bioenergy – or in the case of certain climate protection measures in land use – even an increase in pollution of soils, waters and nature in general may sometimes arise (Hennig 2017; Ekardt and von Bredow 2010; OECD 2008; Ekardt 2016a; see also Nonhebel 2004; Rosillo-Calle et al. 2007; Romppanen 2012). Furthermore, new energy technologies such as electromobility can generate massive consumption of rare metals and large quantities of waste unless the number of cars is strongly limited (explained in detail by Schmidt-Bleek 2014, who, however, does not address the essential motivational problems behind it). Shifting effects do not necessarily imply deliberately circumventing a regulation, but can also consist in the fact that, for example, due to increased energy efficiency, there is simply more capital available for investments in other areas (in detail on empirical data Santarius 2015). Shifting effects are thus directly empirically observable (review Chap. 1.2 on leakage between states and the shifted Western environmental pollution problems, as well as Peters et al. 2011; Hoffmann 2015; Becker and Richter 2015, pp. 3 et seq.; Schmidt-Bleek 2014, pp. 80 et seq.; Gough 2017; Chancel and Piketty 2015). And they also strongly lie in the logic of our behavioural analysis (Chap. 2), which makes a completely calculating and altruistic behaviour towards a reduced environmental impact appear unlikely. In general, cost savings, e.g. in energy, are easily transformed into emission shifts, both geographically and sectorally: Those who live in a new building with good thermal insulation due to command-and-control requirements may convert their saved heating costs into an additional holiday flight. The fact that shifting effects

do not always occur is not so much due to the aspect that some activities allegedly cannot relocate; shifting is always possible at least by saving energy costs, e.g. driving a tram instead of a car and flying on holiday instead (Ekardt et al. 2015; Gesang 2011). It would not be convincing in all this to dismiss shifting effects by pointing out that, after all, increased value creation in the Global South should be sought in the interests of poverty reduction. For this would be better to think in ecological boundaries; the relocation is ecologically irrelevant only in the case of a global quantity control of e.g. greenhouse gas emissions or fossil fuels, which currently does not exist.

4. A problem frequently confused with the effects of shifting is that of rebound effects, some of which have been discussed since the nineteenth century (Hoffmann 2011, pp. 17 et seq.; Santarius 2015, pp. 39 et seq.; Becker and Richter 2015; von Bredow 2013, pp. 121 et seq.; Klingholz 2014, pp. 100 et seq.). A rebound works like a boomerang: Through command-and-control requirements or voluntary action in terms of technical improvements for individual products, houses or cars or individual plants can indeed become more resource-efficient or be redirected to regenerative resources (with detailed empirical findings Santarius 2015). However, this often leads to no or only partial savings in resources or emissions (and sometimes there is even a worsening of the problem: “backfire”). This unfavourable relationship can arise in several ways: (a) A technical improvement such as an increase in efficiency, which is e.g. required under a regulatory law, can lead directly (mediated especially by the reduced energy costs) to this service or this product being produced or used more frequently and the ecological savings thereby compensated. (b) Furthermore, parallel to the technical improvement of a service or a product, increasing societal prosperity in general may trigger increased production or use. (c) At the same time, human behavioural impulses can also shift in the direction of increased consumption (e.g. in the sense of further journeys or larger cars), whereby a good conscience can also play a role due to the supposed ecological improvement (“electric car”; see Santarius 2015; Paech 2012). (d) Another outflow of the rebound effect in the broader sense is the phenomenon that ecological products sometimes do not replace other products, but are simply used in addition to them, such as the new and the old refrigerator “just for the party in the garden” – or renewable energies only in addition (and not instead of) to fossil energies. The entire phenomenon can be observed empirically (Santarius 2015), as otherwise constant technical optimisation would significantly reduce the ecological footprint (see Ridoutt et al. 2015; already discussed in Chap. 1.3) as well as being very plausible on the basis of the behavioural findings, since self-interest calculations and conceptions of normality as well as the feeling of a limited “account of good deeds” play an essential role for human behaviour (Chap. 2.4). Notabene, we have already discussed that a strict causality of motivational bundles for a single behavioural action can never be “precisely measured” in view of methodological problems in principle and the enormous variety of relevant (especially global economic) factors and alternatives (Chap. 1.7). In

all this, one should avoid to label these shifting effects as indirect rebound effects (Santarius 2015).

5. All this is exacerbated for many sustainability problems by the fact that the precise depictability, measurement, calculation and recognition of sustainability stocks make it very difficult to address single actions and its consequences. This will be illustrated by way of example in the further course using the areas of land use emissions (Chap. 4.9) and biodiversity (Chap. 4.10).

All these governance problems such as rebound effects or shifting effects do not concern command-and-control law or voluntary actions alone. Rather, they concern every instrument that is applied to individual products, actions or systems. An example from subsidy law: For example, the current attempt to promote only that kind of bioenergy in the EU which meets certain criteria, i.e. was not produced in the rainforest (see in detail Hennig 2017; Ekardt and von Bredow 2010; skipped by von Bernstorff 2009) does not promise a truly radical solution. Firstly, it is almost impossible to verify these EU criteria anywhere in the world when it comes to administrative enforcement. Secondly, there are shifting problems: The Brazilian bioenergy producer can simply place its bioenergy plants on non-rainforest fields in response to a ban of this kind, and instead raise other production areas, such as feed for Western meat consumption, all the more in the rainforest area. Thirdly, many problems cannot be depicted as “criteria” on which the admissibility of bioenergy could depend: How do you intend to determine, for example, whether the individual bioenergy plant has endangered the world food situation or not?

4.5 Basic Structures of Economic Policy Instruments and Their Defective Implementation So Far

So, how can one respond to the governance problems of the sustainability instruments described above, hoping that sooner or later there would be enough motivation for further development? Or, in other words: How can one react to the governance problems and the underlying motivational problems and construct an effective sustainability governance approach? *The answer is complex and consists of several building blocks. The most important part of the answer will be a substantially broad-based (especially addressing the key factors fossil fuels and animals) and geographically broad-based absolute quantity limitation of damaging factors.* Complementary measures also prove necessary – and a departure from the idea that economic instruments would only promote technical sustainability strategies and economic-growth-oriented tendencies.

Quantity Control As the Core of Sustainability Governance Against the Governance Problems – Under Certain Conditions

Discussing quantities takes us to economic policy instruments. Economic instruments such as cap-and-trade schemes or taxes regulate the consumption of resources or the use of sinks like the atmosphere by limiting quantities or running them short via a price signal. The term quantity governance or quantity control is used in this book for approaches that specifically influence the usable quantity of a resource. In contrast to many environmental economists, the term thus also appears for approaches that do not explicitly start with quantity, such as cap-and-trade schemes with artificial scarcity and tradability of the scarce permissions to use resources or sinks, but which convey this via price regulation, for example via levies or subsidy cuts. One can also speak of direct and indirect quantity control or of economic instruments in general. However, the term economic instruments can lead to misunderstandings, because it suggests that there is a strict contrast to command-and-control law. In reality, all economic instruments are based on laws, all instruments influence prices and all instruments, if they are not broadly based and geographically too narrow, encounter the governance problems discussed in Chap. 4.4.4 (Ekardt et al. 2015; Hennig 2017). The point regarding governance problems will be demonstrated in the following by looking at previous approaches such as the existing EU ETS. Caps in particular could also be described as being “regulatory”, because a cap consists of formulating a ban – only not related to individual products or plants and thus relative, but comprehensive and related to absolute quantities that may be used or released. It is irrelevant to the terminology whether the quantity limitation is brought about by a uniform cap – e.g. for fossil fuels – or by absolute limits distributed across different sectors; whether both would be equally effective will still have to be addressed. Other certificates, for example for renewable energies or for energy efficiency, are also conceivable (closer Panella et al. 2009; Schomerus et al. 2008).

Now the effects of quantity limitation on governance problems such as rebound effects, shifting effects, and enforcement problems have to be analysed. Taxes or the elimination of environmentally harmful subsidies (or the subsidisation of ecologically beneficial activities and products) make undesired behaviour less frequent by pricing it or depriving it of fiscal support. In the case of an absolute cap, a usable quantity of a resource or environmental good is defined in absolute terms, then distributed or auctioned to the users (who can typically trade the permits) and then the quantity of a resource or an environmental good is defined in absolute terms which leads to prices (Schwerd 2008, p. 79; Winkler, 2005, pp. 246 et seq.; generally on the debate Milne 2014; Joseph 2014; Acworth et al. 2017; Garske 2013; Franks et al. 2015; Klinsky et al. 2012). Key to quantity limitation is not the trading element, which only plays a role for keeping environmental policy cheap for norm addressees, but the element of limitation.

Both the formal limitation and successive lowering of targets for greenhouse gas emissions or resource consumption in cap and trade, as well as sufficiently high levy rates, address the rebound effect, since they do not only regulate individual processes, but also make a specific type of action absolutely unattractive. Caps and levies can also prevent shifting effects by comprehensively regulating a closed area, e.g. by making energy use more expensive in all sectors and geographical regions and thus preventing a kind of flight from energy source to energy source or product to product. If caps are geographically broad and include all sectors, both spatial and sectoral shifting effects are avoided. Quantity control instruments can also, to some extent, solve the problems of enforcement and depictability, since they require less detailed knowledge of companies and citizens on the part of the controlling public authorities and only set a boundary (Winkler 2005; Rodi 2008) – and can address an easily comprehensible governance unit, as will be seen in detail in the example of fossil fuels.

Under which conditions all this really succeeds will have to be considered in the following chapters from many sides and examples, including the question of complementary regulation and of parallel addressing of various environmental problems. Economic instruments are promising especially when ambitious quantity targets or levy rates are chosen (otherwise there is no rigour here either) and when sectorally and geographically broad regulation is established, which is linked to a governance unit that is easy to grasp in terms of enforcement. If caps or levies are applied only at the domestic level instead of the transnational level, rebound effects, lack of rigour and weaknesses in enforcement can be effectively tackled. Structurally not as simple to avoid on national level, however, are shifting effects of a geographical and sectoral nature. This shows the need for transnational quantity governance focusing on easy-to-grasp governance units, especially fossil fuels. How transnational governance is even possible without necessarily integrating all countries of the world from the very beginning will be discussed later (in Chap. 4.8).

Quantity Control Addresses Not Only Self-Interest and Technical Solutions

Quantity-limiting instruments are designed to directly address the typical motivational problems (Chap. 2). Economic incentives address different aspects, not only the economic self-interest, as one might assume at first glance, but also, for example, conceptions of normality (on more details see Chap. 4.6). An ambitious cap also addresses any obstructive motivation, because it addresses comprehensively any kind of unwillingness to act. In any case, however, one should not stop using economic instruments because of the flimsy argument that economising through ecotaxes allegedly corrupts the intrinsic altruistic motivation to act (hardly empirically documented by Menges 2006). Rather, this is merely an assumption that might apply, but does not have to apply at all. Moreover, the question as to whether pricing can eliminate an altruistic motivation for action will probably not arise because motivation is rather weak in terms of ambitious sustainability targets.

Caps or prices (see on taxes in general Binswanger et al. 1989) do not only generate pressure in favour of regenerative resources and resource efficiency, i.e. of technical sustainability strategies, e.g. by pricing fossil fuels and thus gradually pushing them out of the market in favour of other technologies. Rather, they can at the same time initiate frugality if the cap is so strict or the price pressure so great that the technical options alone cannot fully address this. In this respect, a cap or price that is generally applied to a resource such as fossil fuels or to an emission factor such as greenhouse gases is initially equivalent (Ekardt and Wieding 2017). This fits in with the earlier findings (in Chap. 1.3) that sustainability as a strategy will most probably have to include frugality, but not as a goal to be pursued as a cause in itself, but as an unavoidable complement to the technical strategies which alone will not be sufficient. The relationship between economic instruments and frugality is largely ignored by friends and opponents of economic instruments alike, as is the potential link between economic instruments and postal growth developments (e.g. Moreno et al. 2015; Bedall 2014; correctly Schneidewind and Zahrnt 2013 and Heyen et al. 2013, which, however, do not show why; the debate between friends and opponents is analysed in detail by Ekardt and Wieding 2017).

The openness of quantity governance for degrowth implications sounds “expensive” at first glance, but it saves, for example, the long-term climate change costs and the other drastic problems of fossil fuels and climate change of an existential and peace-policy nature, etc. This is why it has already been stated above that strategies that effectively address climate change in particular appear to be economically superior to a business-as-usual strategy all in all (Chap. 1.4). Compared with other instruments aiming at the same objective, the achievement of economic instruments is also very cost-efficient (classic Coase 1960), in that sustainability is initiated where it is cheapest for the norm addressees. Even social distribution effects do not only arise from caps or levies, and it will have to be shown separately that the “continue as” strategy would have far greater distributional effects than decisive action (see Chap. 4.7).

Why Cap and Trade Is More Effective Than Other Pricing Instruments or Liability – Against Cost-Benefit Analysis

There is often a central misunderstanding. Through common headings such as economising, valorisation or monetarisation, friends and critics (such as Fatheuer et al. 2015; Moreno et al. 2015; Bedall 2014) often assume that economic valuation and economic instrumentation must be either enthusiastically welcomed or strongly rejected altogether. The link between valuation and instrumentation is supported by the fact that many economists combine the two by first “calculating” the ideal environmental state by means of a cost-benefit analysis and then, for example, suggesting an amount for the cap or the levy so that precisely this ideal environmental state is achieved in the medium term, marked by the misleading concept of external costs (again on this debate between friends and opponents see Ekardt and Wieding 2017). But precisely this “calculation” fails because of the unconvincing character

of the cost-benefit analysis (Chap. 3.8). Instead, however, ecotaxes, levy levels or quantity limits for certificate markets can also be seen as what they are: simply a governance instrument that implements a standard (and not a calculated goal) set by human rights or within the leeway for balancing (Chap. 3.6). Financial pressure, as exerted by such instruments, has the potential to influence human behaviour at an appropriate price level in a way that the political or human rights goal is achieved, and the relevant governance problems are thus solved (Ekardt and Hennig 2015; Ismer 2014). Questions such as which is the most efficient allocation in terms of prices or certificates cannot be answered in a meaningful way due to the lack of validity of the cost-benefit analysis, even if the IPCC, which is dominated by natural science and economics, fails to do so (IPCC WG III 2014, WG III; classic on the economic debate Weitzman 1974, 2008). Irrespective of this, the statement that economic instruments help to prevent the consequential costs of certain products and behaviours from simply being passed on to society remains correct, even if the claim of precise quantification and normative consideration is not. This is true because those products and behaviours become rarer or even disappear completely as a result of the price incentive.

In sustainability-related effectiveness, levies and cap and trade for resources or sinks (such as fossil fuels or greenhouse gases) are ultimately analogous; the long-standing debate on the advantages and disadvantages of the two instruments in comparison (Rodi 2008) has recently lost much of its significance. Ultimately, what counts is that ambitious goals are set, that they are operationalised both on a broad sectoral and geographical scale, and that they are thus achieved at adequate prices. On the cost-efficiency side, the discussion on “levies or cap and trade” is also not as important as generally assumed for the very reason that precise assumptions about the complex economic consequences of major instruments such as European or even global certificate markets, such as those already in existence, can hardly be generated (Schwerd 2008). Taxes may be less accepted (the fact that economists suddenly described taxes as more likely to get a consensus shortly before the Paris Climate Conference has remained a hypothesis; see Franks et al. 2015). In any case, the enforcement, previously considered more complicated by certificate markets, is no longer inevitable with modern technology. The old debate about whether the precise attainment of targets by certificate markets is better or the possible over- or undercutting of a quantitative target in the use of levies is also of little further relevance. The reference to plannability in times of economic fluctuation in favour of levies is also likely to be ambivalent at best, especially since maximum and minimum prices can be used in certificate markets.

However, rebound effects and dependencies of the steering effect on the price level (price elasticity) can be avoided somewhat more safely in cap and trade (Ekardt et al. 2015). Because a cap that is set is simply achieved, it does not depend ecologically on price elasticity, i.e. on the willingness to pay of the consumers. Furthermore, in contrast to taxes, the EU has legislative competence for quantity control by qualified majority in the Council of Ministers without a need for consensus (Article 192 TFEU). On the other hand, changes in subsidies may be inferior to caps and levies, despite some similar effects, because they are usually

more likely to address e.g. the acquisition rather than the use of buildings or cars (Ekardt et al. 2015). In any case, social distribution issues do not only arise with caps or levies, since subsidisation is not for free either.

Irrespective of all these governance considerations, strong freedom- and democracy-related reasons also speak in favour of economic instruments (markets and their regulations have repeatedly been instruments of power for influential circles throughout history, but they are not always exactly that; unilaterally Scheidler 2015, pp. 19 et seq.; more clearly also on the difference between market and capitalism Herrmann 2015, pp. 65 et seq.): Firstly, levies and certificate markets avoid paternalistic bans on concrete individual behaviour patterns, even if, by making a resource more expensive, they result in it being used less across the various spheres of life. Of course, taxes or caps also limit freedom. Some form of limitation of freedom, however, is unavoidable because of the multipolarity of freedom and the need for balancing different spheres of freedom – driving a car, for example, damages other and especially future people and is therefore not simply left to the “responsible citizen” (Chap. 3.6). Secondly, the freedom-oriented character of instruments with a monetary effect is demonstrated by the aspect that they enforce the interplay of freedom and responsibility for consequences – especially when damage is caused by multi-causal rather than linear causal structures. Thirdly, monetary instruments make governance easier for politicians as they bridge uncertainties about knowledge more easily. This is, because the concrete pursuit of the sustainability objective is largely left to the norm addressees in the case of those instruments. It is the citizens, not the politicians, who contribute their knowledge and innovations in order to save e.g. energy wherever easiest. Fourthly, following on this, economic instruments are suitable for stabilising the power of parliaments in the balance of powers (Chap. 3.5), because they do not need extremely detailed concretisations by administrative authorities, which deprive parliament of its power and make politics incomprehensible to the citizens as regulatory law is prone to do. Fifthly, the fact that economic instruments can also promote social balance and do not, as is often feared, infringe it is discussed separately (Chap. 4.7).

In contrast, quasi-economic attempts to achieve more sustainability through civil law are doubtful in terms of their effectiveness and normative dimension, whether through liability law or through general clauses in company law in such a way that companies are obligated to an undefined or only vaguely defined common good or to sustainability in general (more specifically Ekardt 2016b versus Felber 2012). As with self-regulation (Chap. 4.2), such general clauses lead to questions that cannot be resolved meaningfully at the level of the individual company (in a civil court dispute). Where exactly is the boundary between permitted and prohibited behaviour for companies? Can there simply no longer be any airlines from now on? How many more flights can there be? Is the consumption of meat prohibited as a whole, or may only a certain quantity of meat be produced? It is precisely the task of the law to separate this clearly, and economic instruments are a lot better suited for this than general clauses.

Finally, as far as liability law is concerned, it is again not very suitable as a regulation between individual participants to grasp global resource and sink problems.

This is all the more true since especially questions of causality also arise between these individual participants in concrete terms. In the field of climate protection, for example, it is being discussed whether individuals or states can also make direct claims for damages, for example to industrialised countries for possible consequential climate change damage (see Verheyen 2006; Verheyen 2015). This can be interpreted either as a claim under tort law or directly as a consequence of environment-related human rights. At least, the liability approach would not require the vague due-diligence approach of international law, because the necessary care for the climate problem is already described by human rights. However, to attribute individual loss events (which will always be summation losses) concretely to the emissions of another country is a major problem – and it is simply impossible for companies. The result could be that, at best, the (constructed) percentage of the loss event corresponding to the company's or state's percentage share of global emissions could be reimbursable. Against this background, liability law is of more interest for classic environmental damage cases, which are not pursued further here; the statements on this would be similar to those on supplementary regulatory norms (Chap. 4.10).

Why the Current EU Emissions Trading Scheme Does Not Provide Effective Quantity Control – and Why the Typical ETS Criticism Is Biased

The current EU ETS unfortunately fails to meet the strengths of the concept presented above. Just as any ETS, it is designed to gradually set emission reduction targets over certain periods of time, but to make their implementation easier and cheaper for companies. By limiting the quantity of permissible greenhouse gas emissions, the ETS can set and achieve climate targets. Emissions trading has so far applied EU-wide to certain branches of industry such as electricity companies, steel or cement production. The companies receive shrinking emission quotas, with which they can trade if they themselves consume less and another company perhaps more because, for example, the prescribed greenhouse gas reduction is more difficult to achieve there. The allocation of quotas is complicated; in the past, certificates were largely given away because of the previous emission levels.

However, the previous EU ETS does not (yet) fulfil the essential requirements for a sufficiently effective quantity control for sustainability in the sense described above (Becker and Richter 2015; Edenhofer et al. 2016; SRU 2011, p. 389; Bosnjak 2015, pp. 122 et seq.; Sinn 2008; Ekardt 2016a; see also Bailey 2007). This is true even if, after 2020, if some adopted improvements come into force, the EU ETS will at least have a somewhat (!) stricter cap. The EU ETS is still far away from a cap that aims at zero emissions within two decades according to the requirements of Article 2 para. 1 PA. Furthermore, the huge remaining quantities of old certificates partially go on paralysing the instrument (Bosnjak 2015, pp. 128 f.; Edenhofer et al. 2016). In addition, the ETS does not cover all fossil fuels in all sectors by now but only less than half of the EU emissions; mobility, housing, and agriculture is widely

not yet included (on details see Ekardt et al. 2018b). This also has bizarre aspects, for example, if the electricity industry and thus also the railways are obliged to auction electricity, whereas air traffic, which is now included in the ETS, is largely not. The existing ETS also cannot solve shifting effects effects to other countries (on these effects since 1990 see Chap. 1.2). The attempt to prevent the relocation of emissions to other countries by means of rather lax climate targets also appears peculiar (on a better solution see Chap. 4.8). Another aspect of the topos “too low targets” (SRU 2011, p. 389) is that the ETS so far lacks long-term targets that would first and foremost lead to long-term climate investments being made. Furthermore, there are loopholes of the system such as the permission to relocate mitigation of emissions to other countries under doubtful circumstances (see in detail Exner 2016; Ekardt 2016a, § 6 E. II. 2.).

This takes us to the next problem. Even the current global ETS between states established by the Kyoto Protocol (Chap. 4.4.3) is more or less pointless since an ETS does not work in a world with states ignoring the binding 1.5-degree target (see in detail Exner 2016). Notabene, not only the cap-and-trade and its supplements, but also its traditional alternative, the levy, is already present in the EU and its member states with energy- and climate-related intentions, and even this in rather less ambitious forms. The fact that, parallel to the printing of this book, within the framework of the international organisation ICAO a possible global emissions trading scheme for aviation (which is not covered by the Paris Agreement) is being negotiated, which is intended to exacerbate these mistakes even further and, for example, does not provide for any real reduction at all, is mentioned only marginally here because of the debate in progress.

After all, some people fundamentally criticise the idea of cap and trade as a mere indulgence trade with the climate (or other environmental goods) or a mere “commodification” of nature, whose sole bottom line it is to make money, without achieving anything ecologically (International Rivers 2008; Fatheuer et al. 2015; Lohmann 2010; Altvater and Brunnengraber 2011; differentiated Exner 2016; Garske 2013; Schneider et al. 2010; Sutter and Parreño 2007). Indulgence trade should mean that the ETS has no effect on climate protection in essence, but leaves the Western lifestyle untouched, which is why the pricing of “environment” is ineffective per se. However, as we already learned, inadequate caps, a lack of broad coverage of emissions and the resulting incentives only for technical improvement, but not for frugality, are not immanent characteristics of cap-and-trade systems. Moreover, these problems are merely due to the concrete (fatal) design of the EU ETS. Nor can anything in principle (!) be said against the ETS by the popular argument that there can be no “right to emit”. As repeatedly stated, freedom must be understood comprehensively and the necessary balancing of conflicting spheres freedoms is unavoidable (Chaps. 3.4, 3.5, 3.6). A cap and trade, with its gradually decreasing number of emission allowances, is an expression of this consideration. Nevertheless, in terms of ethics and fundamental rights, the process of lowering emissions must be much quicker than before (Chap. 3.8). Lastly, the argument that prices are pointless because they disregard the physical finite nature of the world misses the construction of a cap and trade. This is, because it sets absolute limits.

Not even taxes are really subject to this objection as long as they operate with a drastic level of ambition – and correspondingly high prices.

Conversely, the current economic discussion on economic instruments has just proved to be partly unhelpful because its preassumptions are not correct in some key respects. Keywords were: no cost-benefit analysis; misunderstandings about price elasticity; failure to recognise the scale of the targets; one-sided fixation on purely technical strategies; uncritical adherence to the growth dogma. However, all these mistakes do not speak against economic instruments (contrary to the opinion of many critics), because they can be corrected (on this overall debate see again Ekardt and Wieding 2017; Ekardt 2019). Moreover, these instruments have a huge potential to address some core governance problems and motivational challenges presented above – and they are very well compatible with the fundamental principles of liberal democracies.

4.6 New Resource and Climate Governance Through Newly Focussed Economic Instruments

This chapter is about concrete concepts for sustainability governance that are more effective than before – and which consistently remove fossil fuels from the market, in particular. What could an effective quantity governance look like that takes into account the motivational situation of the actors (Chap. 2), responds appropriately to rebound effects, lack of goal rigour, enforcement issues and shifting problems (Chap. 4.4) – and effectively achieves the normatively required goals (Chaps. 1.2 and 3), i.e. Article 2 para. 1 PA in climate protection?

Global Character, Sustainability and Poverty, Consideration of Motivational Situation and Governance Problems

The energy and climate change transition continues to serve as an example for the development of a concept of quantity governance in the following. Other environmental areas and in particular possible synergy effects of certain measures will be considered almost automatically as well, given the focus on fossil fuels below and their broad relevance. Phasing out fossil fuels will tackle not only the climate problem but also various other environmental problems that are closely linked to fossil fuels. The fact that this is the case for challenges such as biodiversity loss, disturbed nitrogen cycles or soil degradation has already been mentioned and will be considered in detail in the regulation of land use (Chaps. 1.2 and 4.9). Alongside the global climate diagnosis, it must be said that the social situation and poverty in the Global South remain serious. This makes it very likely that ultimately only combined strategies against poverty and climate change should have real chances of political implementation (Acworth et al. 2017; Hulme 2009; Gough 2017; see also Lohmann 2010 and Fücks 2013). In my opinion, however, a

determined climate policy is not (as is often assumed) an additional threat to this precarious situation, but rather an opening to the solution.

In theory, a large, far-reaching global regulation is required due to the global nature of the climate problem, due to the urgent and large problem character, due to the otherwise threatening shifting effects and problems with economic competitiveness, and due to the above-mentioned motivational factors (collective goods problem, self-interest calculations based on the principle of consensus under international law, etc.: see Chap. 2). According to Article 2 para. 1 PA, it is obvious to now demand comprehensive reduction targets worldwide, also considering the distribution rules (from Chap. 3.8). More complicated and therefore to be discussed here in essence is how such general objectives could be translated into a concrete phase-out of fossil fuels in terms of governance instruments. This will be elaborated below, while at the same time presenting a perspective on how such activities could be driven globally from Europe. Since a transition towards sustainability seems attractive with regard to self-interest, morals, and human happiness, the debate will be on the agenda no matter what. In addition, the Paris Agreement explicitly provides for the regular review of appropriate further developments in global climate protection.

E.g. the EU has not announced any drastic reductions in greenhouse gases in Paris and afterwards. But this could be changed. The ETS is a very promising instrument in theory, but it needs to be redesigned completely. For a better ETS, which could harness the potential of the cap and trade against the various governance problems (unlike the current EU ETS), all areas in which fossil fuels are used would have to be covered (on the following Ekardt 2016a; Bosnjak 2015; von Bredow 2013; Hennig 2017; Ekardt et al. 2015; Sinn 2008). It is of secondary importance if this is done by directly addressing fossil fuels or by addressing their emissions. The system would no longer need to monitor many thousands of industrial companies, as has been the case to date, but a comparatively small number of companies that bring primary energy (i.e. not electricity but energy sources) into the market. Only as many fuels and thus emissions as the system allows will enter into the market. The primary energy companies would then pass this scarcity on as a rising price to all energy consumers, i.e. to all companies and citizens. All of this also spares the biased distinction between production and consumption, since all fossil fuels are simply included (misjudged e.g. in Gough 2017, pp. 146 ff.).

The emission reduction target – i.e. the cap for the quantity of certificates – would have to be chosen in a way that the objective of Article 2 para. 1 PA is met. This means a cap zero in no more than two decades (Chaps. 1.2, 3.8, and 4.3). The gradual cap reduction must be set in advance in order to remain within the overall budget. In the EU, such an extended ETS would be the simpler option than a new comprehensive EU energy tax on fossil fuels, as an EU ETS already exists and in contrast to taxes, the EU has the competency for designing an ETS – but also for other countries this could be the more promising option (see Chap. 4.5).

Quantity Governance for Fossil Fuels (and Livestock): A Concrete Approach

If the EU were to introduce such an approach, it could invite non-European countries to join the system. This would be attractive for developing countries if the auctioning revenues of the system were largely left to them (more on the distribution issues in Chap. 4.7). They could then accept long-term emission limits according to Article 2 PA, but would in turn receive money to fight poverty and develop economically – within ecological boundaries in the sense that they are financially capable of mitigation and adaptation (for normative calculations see Chap. 3.8; maybe the revenues of the ETS – as implementing instrument for the financial flows – will be high enough to meet the roughly calculated sum). Gradually, the system could expand globally, especially if absenteeism becomes unattractive – and there are certain means for that, as we will see in Chap. 4.8. At the same time, loopholes such as the Clean Development Mechanism that transfer emission rights to other countries without proper accounting need to be eliminated (see in detail Exner 2016; Ekaradt 2016a, § 6 E. II. 2.).

As far as price stability is concerned, it is obvious that maximum and minimum prices as well as an expiry date for allowances in addition would make sense – and maybe also minimum and maximum quotas for the quantity of allowances that can be auctioned to companies in a certain country (more precisely Edenhofer et al. 2016). If, in future, 100% of the certificates were auctioned instead of being allocated free of charge, it would (probably) be possible to generate a large part of the funds which, according to the findings (in Chap. 3.8), would have to be raised as financial support for mitigation and adaptation in the Global South. It should be remembered, however, that the necessary sums contain a lack of normative clarity, so that no precise quantities can be specified ethically or legally (see Chap. 3.8; it would also be conceivable, for example, to include certain compensation for states that lose revenue particularly as a result of phasing out fossil fuels).

In parallel, counterproductive subsidies such as tax exemptions need to be phased out. In return, a number of other energy and climate policy instruments such as taxes on electricity and mineral oil or heat legislation could be abrogated; conversely, important flanking measures would continue to be necessary (see Chaps. 4.9 and 4.10).

What effects would such an approach have?

- Greenhouse gas emissions or the use of fossil fuels would be strictly limited in the geographical area covered and ultimately reduced to zero. An incentive for more renewable energies, efficiency and, if necessary, frugality is created – because the fossil fuels that can still be used temporarily will gradually become more expensive. Cap and trade, therefore, does not per se stand for a growth economy or “purely technical” environmental protection as which it has been repeatedly presented (at the same time, the frugality relevance of levies is noticed much more often; as an example Moreno et al. 2015; Bedall 2014; correct Heyen et al. 2013, who, however, do not show why this is the case; on levies also

Joseph 2014). Everywhere, prices would successively adequately express the problem of fossil fuels: among others in food, on holiday, in the many small drugstore articles, the high-tech cuisine, the t-shirts, the heating mushroom in the restaurant with outside sitting, and generally in the focus on short-lived disposable articles. This approach would provide a long-term framework and sustainability-related planning security for businesses and citizens. In the electricity grid, the change would be conceivably simple (on questions of storage, Power-to-X, etc., see Chap. 4.10). In the area of the replacement of plastic (where there is no space to replace today's quantities of plastic with almost renewable raw materials), in agriculture, in mobility and partly also in buildings, the challenge would be greater.

- The various long-term and often even short-term economic advantages of an effective climate policy (Chap. 1.4) would occur, leading (initially) in the industrialised countries probably to a moderate post-growth economy in the long term. Reducing poverty in the Global South and securing (or establishing) a welfare state there are also economically advantageous for the industrialised countries and their inhabitants; as we have learned, it is at least more economically advantageous to avoid the drastic costs of climate change (Chap. 1.4). The question of social distribution is examined in more detail later (Chap. 4.7).
- At the same time, this would often have positive effects on other resources (soil fertility, water, biodiversity) as well, since fossil fuels play a key role, especially in land use and air pollutants. Thus, indirectly also soil degradation, biodiversity loss, disturbed nitrogen cycles and other environmental problems are positively affected (Chap. 1.2).
- The system takes the actual motivational situation of actors adequately into account. It addresses the self-interest of citizens and enterprises by setting a price incentive. It also eliminates the collective goods problem by urging everyone, and not just individuals, to act. New conceptions of normality are also being made more likely – the image of free nature consumption will gradually give way to a more careful use of scarce environmental resources and sinks. Generally speaking, an ambitious and binding cap per se addresses any obstructive motivation, because it works against any kind of unwillingness to act. The possible objection that economic instruments do not influence aspects such as the existence of alternatives, the behaviour of a reference group or the situation is simply wrong – and the reference to a low price elasticity of demand does not apply, because a cap imperatively requires a quantity reduction. This does not rule out the necessity of complementary measures (Chap. 4.10). However, the use of economic instruments also makes the use of effective complementary tools more likely.
- The ambitious targets and the extension of the ETS to all emission sectors will secure the target rigour (Chap. 4.4.4) in climate policy, without, as already said, having the problem of price sensitivity.
- Since the system is comparatively simple in terms of administration requirements, it prevents climate protection from getting stuck in the thicket of enforcement problems (Chap. 4.4.4).

- Rebound effects (Chap. 4.4.4) are avoided through absolute quantity limits being set across all subject areas such as nutrition, transport, electricity, etc. with an ETS.
- Shifting effects (Chap. 4.4.4) in the sense of avoiding climate policy measures by shifting to other sectors are also addressed as far as fossil fuels are concerned, because all areas are covered. The tendency that a product needs less energy in use but requires even more energy in production (as is the case with the current generation of electric cars: Schmidt-Bleek 2014) would thus be addressed. With regard to resource-related shifting effects, the collection of this manufacturing energy would award prizes to durable products – which at the same time would relieve other resources by turning away from the throwaway society (on the significance of the throwaway rate Henningson et al. 2004). As regards spatial shifting effects, the entire EU would be covered and such a shifting effect would thus be ruled out. Another question is the relocation outside of the EU, but for this, too, is a good answer (given in Chap. 4.8).
- In order to prevent sectoral (and resource-related) shifting effects, however, the sectors land use, cross-border air and sea transport, which are climate relevant as well, would also have to be priced in principle. This includes indirect land-use changes which are not already covered by the fossil energy sector (like oil-use for fertilisers), such as deforestation, for example of the rainforest. In the case of air and sea traffic, this is theoretically simple because fossil fuels are used there. Land-use emissions are analysed later, taking also other environmental issues into account (Chap. 4.9). Industrial process emissions not caused by fossil fuels are mentioned briefly later (in Chap. 4.10).
- Ultimately, all this is also an essential step towards the political framing of the global market (Chap. 4.4.2). The subsequent question of the further development of institutions concerned with global politics will be briefly addressed separately (in Chap. 4.11; in more detail Ekardt 2016a, § 7).

Towards a New Understanding of Per-Capita Approaches – And on Some Institutional Issues

The goal of zero emissions and equal treatment of all people in this respect (Chap. 3.8) is ultimately a refined version of equal per-capita emission rights. In addition to the focus on zero emissions, the new features are the concretisation, the focus on motivational and governance problems and the precisely justified and ambitious normative target. Per-capita approaches in general are often advocated, sometimes under the heading of contraction and convergence (on my approach in an earlier version Ekardt and von Hövel 2009; calculated at Ekardt et al. 2015; to the basic intention also Ott and Döring 2004; Ekins et al. 2014; Chancel and Piketty 2015).

As an alternative to what has been said, instead of a common market for fossil fuels, submarkets could also be created for different countries and sectors. The cost of this would be greater, and the cost efficiency for society as a whole would probably also be lower (Bosnjak 2015; Sinn 2008) – but this approach would avoid

possible social conflicts due to different abatement costs of emissions in different sectors such as mobility or housing. Elsewhere, examples were given of how a primary energy ETS could solve the governance problems of the transport sector (Ekardt et al. 2015, Chap. 3.3.2.1; Ewringmann et al. 2005; see also Bosnjak 2015). This way, all motorised and electrified transport services are recorded, while avoiding rebound and shift effects. Cars cannot simply become ever more powerful anymore. In addition, shifting effects towards electric mobility (with coal-based electricity) or biofuels produced in an emission-intensive way, for example, are addressed by pricing fossil fuels – or in last consequence through supplementary pricing of land-use activities (Chap. 4.9).

It is not an option to simply stick to the current ETS approaches in different world regions (for example in the EU, Australia, South Korea or parts of China, Canada and the USA), and simply linking them without fundamentally reforming those systems (not clear in Klinsky et al. 2012). Because, if these systems are not designed in a sophisticated way, mere trading of permits is of little ecological benefit. Furthermore, there would probably be problems if a personalised per-capita emissions trading system were created in the EU or even worldwide. Under the auspices of such a personal carbon trading scheme (Müller 2009; Gesang 2011), every citizen would book his or her greenhouse gas relevance directly by credit card in everyday actions and thus personally become a global certificate trader. The approximate economic and climate policy effect of this model would be comparable to the present approach, but per-capita trade creates much greater enforcement problems because not just a few companies need to be monitored.

Of course, it is obvious that in many countries there is a lack of competent administrative authorities even regarding the proposed approach based on fossil-fuel companies (on this problem Ott and Döring 2004; Unnerstall 1999; Ekardt 2016a). In contrast to a patchwork-like command-and-control law, however, the proposed approach is simpler and clearer, moreover actually promising and thus much less susceptible from the outset to “silting up”. Irrespective of this, it remains virulent that social change will only succeed in the interplay of different actors (Chap. 2.7).

The discussion on quantity governance cannot be reduced to strategies such as divestment or investment requirements for companies or banks (on the World Bank see Bernstorff and Dann 2013). This would lead to a kind of self-regulating fossil cap. But self-regulation alone is not sufficient (Chap. 4.4.2), even though those efforts are also important in the sense of the necessary interplay of different actors in social change.

We have seen that an effective sustainability governance approach which takes motivation, governance problems, and targets into account is possible. It needs to be a quantity governance, addressing major noxes such as fossil fuels on a broad geographical scale. By the same token, the motivational analysis (in Chap. 2) raises clear doubts as to whether the transformation will get off the ground in good time. That is fatal. For, the longer a reform is postponed, the more the ecological and economic costs of hesitation rise.

4.7 Sustainability and Questions of Distribution

One objection to a serious sustainability change that has been raised several times is that it is bad for the socially disadvantaged. This objection can relate to the developing countries, but it can also relate directly to the situation in industrialised countries. The question of the short-term social impacts of environmental and sustainability policy has so far been raised under the heading “environmental justice” for pollutant policy, but hardly for climate policy. Since both environmental damage and environmental policy raise distribution issues (Chancel and Piketty 2015; Gough 2017; Ekardt 2016a), both must be discussed and solved together.

Quantity Governance: Socially Advantageous Contrary to Commonly Assumed

Based on the proposed price increases for fossil fuels, life would indeed become more expensive for the time being. Cars, holiday flights, large overheated apartments, and meat consumption to name just a few items concerned. This is the case if fossil fuels are used in their production or use and price increases are not offset solely by greater energy efficiency or a switch to renewable energies. And the financial leeway of the socially weaker is narrower than that of the high-income households, as the share of income paid for energy costs is higher (even if the wealthier consume more energy per capita). Even though the justice of the proposed approach has already been explained (Chap. 3.8), there is still something to be said here about the distributional effects and the possibility of mitigating them.

Measures such as a mineral oil tax or an ETS leading to a cost allocation to the final consumers of energy, products, etc., have already had a “regressive” effect to date. This effect also applies to environmental protection and environmental pollution in general (Gough 2017; Salter et al. 2018; Gawel and Korte 2015; Ekardt 2016a). In addition, the reduction in pension contributions from eco-tax revenues practised e.g. in Germany is of no use to certain socially disadvantaged groups (e.g. in case of unemployment). In addition, many climate policy-motivated support programmes and tax breaks only benefit those who already have a good income. This applies, for example, to the promotion of energy-saving products, such as houses.

However, one can hardly argue that the increasing numbers of electricity and gas locks subsequent to default of payment of energy bills by low-income households, e.g. in Germany, can be attributed primarily to climate policies. There are also distribution effects between regions (e.g. in Germany since subsidised wind power is mainly generated in the North) which need to be taken under consideration. These, however, are difficult to assess because they strongly depend on capacities for conventional power generation that have been dismantled in parallel (in some cases) and investments in other areas that have not been made in favour of the energy system transformation (more on that in Gawel and Korte 2015).

Nevertheless, the energy and climate transition (and the sustainability transition in general) tends to be a win-win situation for the “socially weaker”, whoever is covered by this somewhat vague term. It is important to bear in mind that the expected disadvantages might not occur in the first place – and that, if they do occur, they can be compensated for or will be less serious in an overall view. This will be discussed first for the socially weaker in the industrialised countries and then in relation to the Global South:

- Firstly, as already mentioned, price increases for fossil fuels can be averted individually by consuming renewable energies and energy efficiency. Efficiency and renewables are further promoted by the pricing of fossil fuels anyway.
- Secondly, moving away from fossil fuels tends to create jobs, which is an advantage for solving issues of social distribution. In general, resource or sink pricing also tends to slow down rationalisation (since it makes natural resources compared to labour more expensive), thereby stabilising the labour market and other indirect social benefits. Generally speaking, the energy and climate transition is economically far more sensible than omitting it (Chap. 1.4). In the long run, therefore, relying on fossil fuels would be more anti-social because it would be much more expensive for societies. If we introduce a pricing system for additional resources besides fossil fuels (and livestock farming), we could also consider reducing the taxation of labour in return.
- Thirdly, government revenues from increases in fossil fuel prices can be used for purposes of social cushioning. To a large extent, this refers to the developing countries that can participate in the system in return (for the normative calculation of the necessary transfers, see Chap. 3.8 – and ETS would be the instrument to implement these payments). However, an increase in basic social subsistence can be considered in order to finance basic energy demand. Incidentally, such a financial transfer does not encourage an increase in energy consumption, since the greenhouse gas emissions are capped by the cap-and-trade, preventing just this.
- Fourthly, the socially weaker in industrialised countries would benefit from the fact that the transfer of funds to the Global South would stimulate the development of the welfare state there, thus slowing down a global race to the bottom regarding social standards and thus stabilising the Western welfare state (on this dynamics see Chaps. 4.11 and 4.4).
- Fifthly, the consequences of climate change and other environmental problems could themselves trigger much larger social distribution effects than gradually increased prices for fossil fuels. The debate is thus one-sidedly reduced to the here and now. In industrialised countries, too, the socially disadvantaged will be disproportionately affected by environmental problems such as the threat of climate change – natural disasters, wars, exploding energy prices, collapse of supply security, etc. For financial reasons, low-income people have fewer options for prevention and avoidance. And if sustainability challenges such as climate change are ignored, the problem is simply shifted to future generations, the

countries of the Global South and especially to the socially weaker. Their legal guarantees (!) therefore demand more sustainability (Chap. 3.8).

- Sixth, it is often ignored that industrialised countries like Germany, USA, Canada or Japan are rich countries on a global scale.
- One can reply to all this by saying that the socially weaker still would not always have the above-mentioned option of escaping from rising energy prices through more efficiency and more renewable energies. Because without capital, you can hardly buy an energy-efficient refrigerator. Socially weaker people would therefore actually be forced into frugality. However, this objection is also incorrect if, for example, this problem is addressed by adjusting the basic social subsistence system. And even if this were not done, a seventh point of view remains why the energy and climate transition cannot simply be branded as bad for the socially weaker: Even without energy and climate policy, not everyone can afford a flight to Tenerife. There is also no general right to have everything at any time, and moreover often, at the expense of other people in view of the consequences of the previous lifestyle. And it is not climate policy in particular that hits the poor particularly hard. For example, the VAT that exists in most countries is no different. The concept of justice developed in Chap. 3 also makes it clear that politics is only given a framework, but not, for example, a precise socio-economic distribution order (Chap. 3.4).

The previous policy of bringing the environmental and the social together makes a cardinal mistake: it was believed that “a little less environmental policy” were the best way to relieve the socially weaker. Instead, the more promising principle seems to be: serious environmental policy, partly with financial compensation for the socially really weaker people (Gawel and Korte 2015; Ekardt 2016a). Short-term and long-term, national and global aspects of social distributive justice are thus taken into account. “Lower (consumption-promoting) energy prices and continued use of (supposedly cheap) fossil fuels” does not solve these complex interconnections. Another way of getting bogged down is shown by typical discussions at national level, such as the question of whether the subsidies for renewable energies (Chap. 4.4.4) should be rather borne by companies or by the citizens who consume electricity. If the companies are burdened more heavily, they accordingly make their products more expensive, and again the costs end up at least partly with the consumers.

Distribution Issues on the Global Level

The question of whether a serious transformation regarding energy and climate will create social distribution challenges can be repeated on a global scale (Gough 2017; Salter et al. 2018; Ekardt 2016a). The proposed model of quantity governance (Chap. 4.5) incorporates the developing countries, following the rationale of Article 2 para. 1 PA, and provides for compensation payments. That model implies in a nutshell: standards for money (Radermacher and Beyers 2011). This way, economic development is steered in the right direction in terms of climate policy (and

environmental policy in general) and at the same time made financially feasible. But is this really beneficial and not detrimental in terms of global distributive justice?

- First of all, a determined fight against environmental problems and especially climate change would avert its devastating social consequences in North and South. The model also favours a worldwide and sustainable basic supply of affordable energy and the creation of jobs in certain future industries, as well as a permanently peaceful world.
- The increase in the price of fossil fuels combined with a financial transfer to the countries of the Global South is particularly beneficial for economic, and at the same time ecological, development and poverty reduction in the participating developing countries. It is even worth considering to label this financial transfer there as a per-capita ecobonus, which would currently fail in various countries since not everyone owns a bank account. Anyway, the primary intention would be to broadly cover the costs of mitigation and adaptation while enabling social security systems etc. More prosperity tends to lead to higher energy consumption, unless the emissions are capped by the ETS. Development aid on the other hand, must not be cut. A financial transfer would have to be combined not only with environmental standards, but also with measures to establish reliable administration, since the practice of development aid shows that, without proper administration, money inflows will achieve little in the long term (Deaton 2015). At the same time, this sets the course for the medium-term establishment of the welfare state in the Global South (see also Chap. 4.11; in more detail Ekardt 2016a).
- However, if global climate protection is designed in a way that the permissible amount of emissions cannot grow in absolute terms, one could assume a disadvantage especially for the poorest countries, which usually have high population growth. This is true, but this is precisely one of the reasons why financial support for developing countries is necessary.

Autocrats around the world like to shout out “Western cultural imperialism” when we argue with human rights and derive political instruments from them. But the idea of equal emission rights was first raised politically by the governments of Pakistan and India, i.e. by countries of the Global South (Jäger 2018), and the constant criticism of alleged cultural imperialism is also of little relevance in other respects (Chap. 4.3.1). *In short, it is therefore possible to make some statements on distributive issues of sustainability – but these do not have the sharpness of detail that statements on justice in general have* (see already Chap. 3.4).

4.8 Competitiveness, Shifting of Emissions, Global Economy: Could the EU Become a Real Pioneer?

At this point, a particularly important issue of sustainability governance needs to be addressed: How can we prevent ecological shifting effects on a global scale and the resulting economic disadvantages for ecologically ambitious countries – and can

there be any ecological leadership at all under these conditions? This chapter will show that there is a solution that would be an important addition to quantity governance for fossil fuels (and livestock farming: Chap. 4.9).

Competitiveness, Shifting of Emissions, and the Global Character of Sustainability Challenges

There are three areas of concern to be addressed here: (1) Sustainability problems such as climate change as a global problem cannot be solved in some industrialised countries alone, and yet it can be strongly assumed that no proposals of the kind just made will be consistently implemented internationally in the near future. (2) Even an implementation in the EU as a transnational entity is prone to lead to the shifting of emissions or, more generally, to the relocation of consumption of resources and sinks outside the EU, which would make its own sustainability policy partially ineffective. (3) The whole thing could also jeopardise the competitiveness of European business. In a free world market, all countries are also competing to attract companies – and thus also to keep climate and, incidentally, social and corporate tax standards at a “moderate” level. A socio-political race undermines the fight against poverty in the South and endangers the Western welfare state. And the climate policy race to date shows that both industrialised and developing countries are doing too little. And the overall constellation described is also democratically not very advantageous, because domestic parliaments seem to be left with only the administration of factual constraints (for this situation, which is repeatedly becoming virulent in the present case, see in more detail Chap. 4.11 – and also on the question of global institutions of democratic framing). Does this pose a serious problem for the establishment of effective sustainability instruments at EU level and in some additional countries, as it was proposed in Chap. 4.6? (see also Ismer 2014; Radermacher and Beyers 2011; Ekins et al. 2014; Becker et al. 2013; Napoli 2013; Pirlot 2017; Ekardt 2016a)

- With regard to spatial shifting effects and competitive disadvantages, we are predominantly talking about a conceivable future situation. Until now, Germany and the EU, contrary to their self-image, have so far not really been pioneers in terms of sustainability and especially not in terms of climate change, although there are already emissions shifts on a limited scale (Chap. 1.3; see also Yamazaki 2011, where, however, only minor climate policy measures are assumed and industry exemptions are considered accordingly).
- Even purely domestic measures are better than nothing from the perspective of sustainability. Spatial shifting effects are not impending in all areas of life – for example not in the case of rush-hour traffic, which will hardly shift from Berlin to Beijing just because petrol in Berlin has suddenly become more expensive. And perhaps some shifting effects can also be partially compensated by the fact that a role model would also drag along other states, as seen in the case of the German renewable energy subsidies. Even if e.g. Germany alone were to ban

coal-fired power plants, path dependencies in Germany could also be avoided, even if the coal would then perhaps be used by others (and maybe even coal-based electricity would be imported). Avoiding path dependencies means that no new coal-fired power plants will be built here, at least in Germany.

- Especially the EU tends to underestimate its role as a large market: it is conceivable that model effects of a more active EU role could arise that would at least partially compensate for possible shifting effects. Germany plays a key role within the EU, which is shown by the euro crisis and could also be shown once in a while in terms of sustainability change. It might also be possible to partly avoid the shifting effects by allocating appropriate funds, for example for infrastructure (Franks et al. 2015), but this would stand in contrast to the necessary North-South transfer.
- Some companies, such as in the renewable energy sector, the trades involved in thermal insulation, and others would have tangible economic advantages from a forerunner approach and no competitive disadvantages to start with (Chap. 1.4).

The problem of shifting effects and competitiveness on an international scale should therefore not be underestimated. But what could an (economically and ecologically helpful) solution look like?

Environmental Pioneers Through Border Adjustments: Functionality, Opportunities and Limits

However, entities like the EU (and a coalition of willing countries: Chap. 4.6) could address the problems of shifting effects, the need for global action and competitiveness through an additional measure and thus also advance in the phasing-out of fossil fuels. The additional measure required for that could be border adjustments at the EU borders for imports and exports (also proposed by Ismer 2014, pp. 406 et seq.; Radermacher and Beyers 2011, pp. 114 et seq.; Ekins et al. 2014; Napoli 2013; Pirlot 2017; Ekardt 2016a; see also Becker et al. 2013).

What would that mean? If border adjustments were to introduce on products from countries with a less costly policy on fossil fuels into the coalition of willing countries, the products would be burdened at the border with the costs saved in production due to the lack of climate requirements. If, on the other hand, enterprises from the “willing” countries exports products, domestic companies could receive a payment (partly?) compensating the higher costs paid in Europe as a result of climate policy. The revenues from the eco-tariffs might be partly allocated to developing countries – given that there will be revenue despite the import-export compensation.

Border adjustments achieve all this without the effects of the EU strategy of avoiding spatial shifting effects through industrial exemptions and thus indirect subsidies under the ETS (Yamazaki 2011; Ismer 2014; Pirlot 2017). In addition to shifting effects, this also prevents other states from sitting back and relying on the actions of the pioneers in protecting the global climate (or that pioneering states lose

negotiating power in global climate protection). Discussions on whether climate protection obligations remain in place despite unwilling other players prove to be a fairly theoretical exercise (see Caney 2016 as an example). Border adjustments would allow the EU and other willing states to set an example to countries such as China and the USA – and to show that sustainability and economic development are not mutually exclusive. This may create a willingness to take clear steps forward.

Some falsely claim that border adjustments were dispensable, because there would not actually be a problem with competitive disadvantages anyhow. This statement assumes, however, that EU climate policy will remain as unambitious as it is to date. Furthermore, border adjustments do not endanger free trade, but instead create a level playing field. Also, the exact design is not per se very complex, since it is possible to work with broad figures, i.e. to use estimates with regard to the energy intensity and the virtual ETS costs of the imported products saved by not meeting the standards. Probably border adjustments are only sensibly implemented using a rather “conservatively” calculations due to WTO legal reasons (Chap. 4.11 and in detail Ekardt 2016a, § 7 C. and Becker et al. 2013). Otherwise, the instrument would reach its limits. Alternatively, the calculation of emissions can be spared if linking the border adjustment directly to the product instead of the production process and then using prices based on best available techniques (this tends to reflect too few emissions but solves all practical difficulties).

The entire approach of border adjustments is not just a theoretical option that works very well in terms of ecological effectiveness and competitiveness. Rather, the EU is required to implement it since this promises to make overall climate protection more likely to succeed (Chap. 3.8). In the case of resources other than fossil fuels, it is also possible that border adjustments may only apply to imports, if respective resources are not exploited at all in the forerunner countries in the EU. The decisive interim result is that sustainability governance should ideally start at a global level. However, there are certainly effective intermediate steps to start feasibly and gradually expand to the global level.

4.9 Integrated Solutions for Environmental Problems Such as Land Use, Energy, Climate, Biodiversity, Phosphorus and Nitrogen

Sustainability in general and sustainability governance in particular are widely equated with climate protection. And climate protection is equated with the electricity sector. In the past, not only the heat and mobility sectors have often been ignored, but also greenhouse gas emissions caused by land use, especially agriculture and forestry (Chap. 1.2). Agriculture is also of key importance because it links the climate issue with other similarly existential but less perceived ecological challenges regarding biodiversity, soils, water bodies, nitrogen and phosphorus cycles (in addition to Chap. 1.2 see again FAO 2012; IAASTD 2008; Hennig 2017; Ekardt 2016a; Gilbert 2009; Nkonya et al. 2016; especially to Phosphorus Cordell et al. 2009a, b; Ekardt et al. 2015; Stubenrauch et al. 2018; a first – and more

detailed – version of this chapter can be found in Ekardt et al. 2018b). This section discusses the following points: In addition to fossil fuels, animal husbandry has to be discussed – and there are also suitable instruments for controlling quantities. At the same time, there are paths for an integrated solution of various environmental problems.

Land-Use, Climate Change, and Livestock Farming

Land use, land-use change and forestry (LULUCF) are some of the major areas in combating climate change (on the following Hennig 2017; Angelo and Du Plessis 2015; Ekardt 2016a; Fry 2002). This sector includes storing and emitting CO₂ from forests, arable land, grassland and wetlands. The unique quality of the sector is that it does not only account for emitting GHG, but also serves as a sink. The storage capacities of soil, forests and wetlands are enormous – however, only if they remain intact or are used while preserving their functions. Traditionally, the term LULUCF was used in a narrow way. It did not cover agriculture as a whole; in particular, it did not cover emissions from livestock or fertiliser production. Since the Fifth Assessment Report of the IPCC, the term AFOLU (agriculture, forestry and other land use) was introduced alongside LULUCF, broadening the term to describe all climate aspects of land use as a whole. This extended definition includes also emissions from agricultural soils, enteric fermentation, manure management systems, and rice cultivation (on this and on the following IPCC 2007; IPCC WG I 2014). We will see, however, that in current regulations, some emissions from land use are not covered by so-called LULUCF regulations, but rather by those aiming at the non-CO₂ sector in general (especially livestock farming – with the exception of grazing land). The focus of this paper is on agriculture, even if the term land use, as commonly used in international law, also includes forestry.

In the area of land use (on the following; IPCC 2000), we are talking about the GHG carbon dioxide, methane, nitrous oxide, and nitric oxides, which are especially associated with livestock farming and animal feed production (starting with the fact that production of animal products including pastural agriculture makes up around three quarters of global agricultural use). Generally speaking, we are dealing with digestion-related emissions, fertiliser production, fertilisation and fertiliser storage, GHG-emitting land-use changes etc. (e.g. conversion of wetlands, grassland or forests into cultivated land). In turn, land use is affected by climate change, which triggers feedback reactions with regard to the soil, even if land use does not ostensibly change, e.g. in permafrost soils and wetlands (on feedback effects see Chap. 1.2). More specifically, considerable amounts of methane are produced in digestive processes of ruminants. Likewise, nitrous oxide and nitric oxides (as well as ammonium) are a result of the application and storage of N-containing fertilisers. In addition, the production of N fertilisers is very energy intensive (which is frequently not counted as land-use related emissions), as will be elaborated later.

The quantity and quality of ecosystem-service potentials depend on the state of the land. Modern land-use practices can raise the supply of ecosystem services (e.g.

climate regulation) in the short-term; however, due to different degradation processes, which, for example, are caused by intensive agricultural production, the medium and long-term quality of many ecosystem services might – considerably – deteriorate on regional and global level and harm biodiversity. Soils, forests, plants or oceans can function as carbon reservoirs. The different kinds of sinks lead to calculation and balance problems, also because they have different quotas for the reflexion of solar radiation. Therefore, deforestation with successive afforestation might not maintain the same effects on warming and cooling (IPCC WG I 2014; Hennig 2017). Also, besides sink and Albedo attributes, other climate-relevant ecosystem services must be considered. Keeping this in mind, the idea of fighting climate change essentially through afforestation is doubtful: The effect is probably much lower than hoped for, as the sink capacity of trees and the available land is overestimated, while the land-use competition is underestimated (Black 2011; Hennig 2017; Ekardt 2016a; overlooked by Radermacher and Beyers 2011). Furthermore, there is at times a conflict with combatting biodiversity loss. Also, afforestation on land which was not managed before might lead to an increase in emissions. This happens, for example, when wetlands, unmanaged grasslands and forests are used to plant quickly growing, biomass-producing trees.

These uncertainties also show that land-use questions as a whole are much more difficult to capture than fossil-fuel use alone. In this regard, the IPCC identifies the improvement of remote sensing technologies as most promising (IPCC 2007). In addition, however, there are factors like the high number of small emitters, difficulties in verifying individual emission sources as well as problems with the monitoring methodology.

Anyway, due to the global increase in consumption of animal products along with a growing population, longer transits, high food losses and more intensive soil usage, agriculture has become a major climate factor. The same factors are also responsible for other ecological issues like disrupted N cycles, soil degradation, loss of biodiversity and considerable water pollution (on this and the following: Moreno et al. 2015; Stoll-Kleemann and O’Riordan 2014; Hennig 2017; IPCC 2000; Voegt-Kleschin 2013; Sakschewski 2016). Climate change and biodiversity loss reinforce each other, and the storage capacity for GHG of vegetation has drastically declined over the past decades (Chap. 1.2). Considerable amounts of GHG are emitted in terms of global mineral fertiliser usage, primarily for intensive agricultural production systems (FAO 2017a, b). In addition, heavy machinery uses an increasing amount of fossil fuels. Economic improvements, particularly in emerging countries, has led to a steadily growing demand for animal products and therefore increasing emissions of methane and nitrous oxide. However, depending on the method of production, there is a substantial difference in the climate footprint of some agricultural products. Organic farming, for example, produces lower emissions per area, but looking at the emissions per product unit, they are on average higher than in conventional agriculture. Combining organic farming, which uses less fossil fuels than conventional farming, with less animal food (instead of compensating for smaller yields by using more land), would improve the climate footprint of the food system immensely (UNCTAD 2013; Meyer von Bremen and Rundgren 2014;

Ekardt et al. (2018b) provide an overview on the literature). At the moment, pressure on land use increases due to the trend of using (cultivated) biomass for energy and material use. In view of its impact on climate, environment and food security, it should however only be used sparingly, despite the advantages its materiality might have for future energy supply (Chap. 1.2).

In agriculture, there are many technical approaches aimed at reducing emissions: such as precision farming and efficient fertilisation, rewetting of peatlands, vegetation decisions, animal feed composition, etc. (IPCC 2000; IPCC 2014). But even though emissions intensity, meaning GHG per unit, has decreased because of increased efficiency in agriculture and forestry (Stoll-Kleemann and O’Riordan 2014; Voget-Kleschin 2013), there has also been an increase in the intensity of land use with all its consequences. Therefore, agriculture is a sector which shows that besides technological solutions, frugality – meaning behavioural changes like clearly reduced consumption of animal products – is necessary (Chap. 1.3). In essence, this seems necessary in order to meet the target of limiting global warming to 1.5 degrees within two decades according to Article 2 para. 1 PA (Chap. 1.2), and even a technologically improved agriculture will still emit significant amounts of GHG. Thus, even if animal-based diets were to be reduced substantially, it will be necessary to absorb remaining emissions through technologies to create negative emissions, although not as much as IPCC statements suggest (on this debate see Chap. 1.2). With that in mind, rewetting peatlands, or (if land is available) afforestation, appear more reasonable than expensive and risky geo-engineering approaches.

As an agriculture sector which is compatible with the Paris Agreement, and also with other international binding agreements such as the Convention on Biological Diversity (CBD), will have to abandon fossil fuels, many issues still need to be addressed (on the following UNCCD 2012, 2017; Angelo and Du Plessis 2015; Philibert 2017; Stoll-Kleemann and O’Riordan 2014; Hennig 2017; many more references on the following are provided by Ekardt et al. 2018b). As already mentioned, currently, agricultural processes heavily rely on mineral fertilisers and the use of heavy machinery that so far cannot be operated by electricity alone. Furthermore, due to the highly globalised food market, a long processing chain for food production exists, which requires the use of fossil fuels as well. With regard to the use of fertilisers, the orientation towards a circular economy demands the use of recycled fertilisers and fertilisers produced with renewable energies. With regard to renewably-produced N in mineral fertilisers, there is the (so far little used) option to renewably generate hydrogen which is needed for the ammonium synthesis. Traditionally, natural gas is used for the energy-intensive Haber-Bosch process, it is however possible to generate hydrogen through water powered electrolysis with renewable energy – but at different economic costs for businesses. In order to achieve regionally adapted fertilisation in agriculture, which is largely organic, it is necessary to establish livestock farming systems that are optimally adapted to the side-specific conditions. Integrated crop-livestock systems, that combine livestock farming and crop production and which are clearly geared to the locally available arable land in terms of the number of animals are therefore preferable. Hence, this

requires structural changes in the current farming systems, which have so far rather followed the ideal of specialisation and intensification and is inevitably associated with a significantly lower total production of animal foodstuff. However, more research is needed to develop methods to close local fertilisation cycles and preserve climate and biodiversity at the same time according to the legally binding international agreements (PA, CBD). In this context, a rough estimate would be helpful to determine how much organic fertiliser could be produced globally with varying amounts of livestock, and which levels of emissions would still be produced (and how much carbon could be stored additionally in sinks due to changed land use and livestock farming). Not to forget that even with a much smaller quantity of animals, methane and CO₂ emissions from the digestion of animals, considerable drivers of climate change, would remain. A further question is to what extent these emissions can be avoided, for example by improved feeding practises in cattle farming or methane capturing and conversion in piggeries. The remaining quantity of available fertiliser originates in farms and the additional sequestration potential of sinks due to changed land-use practises (as result of a lower overall quantity of farm animals and less feed cultivation) determine the emission intensity of livestock farming decisively.

Caps for Fossil Fuels and Livestock Farming

As has been shown elsewhere, all these problems have not yet been sufficiently addressed e.g. in the EU by command-and-control law and by subsidies compared to the overall targets such as Article 2 para. 1 PA (Ekardt et al. 2018b, also on the following). This is not surprising given the analysis on these governance approaches (in Chap. 4.4). The dissatisfactory legal consideration of climate impacts of land use and agriculture leads to the questions why this is the case and even more which promising governance options there could be.

Too high GHG emissions of land use despite a declared intention of more sustainability can only surprise at first sight. According to the behavioural findings (Chap. 2), farmers are subject to a trade-off between economic and ecologic interests. This is more severe than in other areas of economic activity because of the income situation in the agricultural sector. Although farmers have a certain motivation to keep their soil intact, because long-term quality of soils is a necessary basis for securing permanent harvests, short-term economic interest will often have the potential to determine their actions. These economic expectations are fuelled by distributive enterprises. Additionally, the EU subsidy system, complemented by national programmes, continually supports the short-sightedness which is primarily focused on mass production of agricultural products. It therefore sets incentives for ecologically and resource-politically problematic intensive livestock farming. Citizens in turn often respond to the (short-term) low food prices. All this has been already condensed to a theory of causes for non-sustainability, taking values, emotions, path dependencies, problems of collective goods, conceptions of

normality, and the interaction among stakeholders into account, in addition to the mentioned self-interest (Chap. 2).

It is tempting to further strengthen existing rudimentary instruments for land-use regulation, e.g. subsidy schemes, fertiliser law, clean air law, agricultural law, etc. However (on the following: Chap. 4.4), (1) there is the issue of effective enforcement of any regulation especially in agriculture. Within command-and-control law and subsidies law (e.g. CAP), which is currently dominant in this sector, it is not possible to fully resolve this problem, because an infinite number of small individual actions would need to be monitored by administration. (2) Furthermore, command-and-control and subsidy approaches with their focus on a special place, action or product have the disadvantage that they tend to trigger unwanted shifting effects of environmental problems to other countries and where possible other sectors. Reducing fertilisation e.g. in Germany could lead to intensified farming elsewhere. This makes it also hard to primarily focus on new approaches that are just established on a domestic level (e.g. meat tax). (3) As shown, emissions from land use are oftentimes hard to exactly quantify. The many different land-use processes which produce emissions and whose exact emissions highly depend on their individual circumstances and make it difficult to be monitored precisely (still a little more optimistic Ekardt et al. 2011a, b; more differentiated Hennig 2017). (4) Also, there are potentially rebound effects if in a specific area, e.g., fertiliser use is improved while the overall global trend of increasing land use continues. (5) Even if an approach addresses all these problems, it needs to contain an ambitious target in line with Article 2 PA; this can be said neither for existing detailed regulations nor for the existing EU ETS as (despite its cap) economic instrument for fossil fuels (Chap. 4.4).

Nevertheless, the issue is put on the agenda by the imminent review of the CAP – and by obligations under international law like the limit of global warming to well below 2 degrees, even better 1.5 degrees in Article 2 para. 1 PA, which point towards a fossil-fuel-free (e.g. without any mineral N fertiliser based on fossil fuels and maybe without heavy machinery) and low-emission agriculture (and compensations of remaining emissions). This calls for completely new concepts, given that the timeline is only one or two decades (Chap. 1.2). Therefore, a completely different perspective is needed:

Central starting point for land-use governance in terms of climate protection should be livestock emissions and fossil fuels, due to their key role for the climate and further ecological problems. Eliminating fossil fuels from the market globally, or at least in the EU, within two decades is the overall strategy for climate protection (Chap. 4.6), and this would have consequences also for agriculture, land use and especially for emission intensive animal husbandry. As we already discussed, this should be done by means of an extended EU ETS covering all use of fossil fuels and with an ambitious cap (oriented on Article 2 para. 1 PA). This would mean thinking materially and geographically broad and working with an instrument with an absolute quantity limit (cap), which is the condition to eliminate rebound and shifting effects (it would however, probably require a complementary border adjustment for imports and exports in order to account for e.g. animal feed and to

avoid shifting effects). This gradual phase-out of fossil fuels in electricity, heating, transportation and agriculture would have incisive effects on the agricultural sector, because of the impact on mineral fertilisers, mobility, machinery etc. Also, efficiency measures and less consumption of animal products – which would be particularly affected due to their currently high feed intensity – as well as less food waste would be triggered (IAASTD 2008; FAO 2011). Animal products from pasture farming would thrive (while having a better climate footprint due to the independency from animal feed from arable land, no additional acquisition, and as a result an intact C cycle).

Furthermore, livestock as such needs a cap as well. Again, Article 2 para. 1 PA is the yardstick and the avoidance of the governance problems described (such as shifting effects) – which is why it makes little sense to apply national measures such as meat taxes, which also only address a part of animal food and only aim at reducing consumption by a few percent (overlooked e.g. by Sharpley et al. 2015; Säll and Gren 2015; on different options see also Altvater et al. 2015). There are two different ways of controlling quantities: Livestock could be additionally included in an amended EU ETS or could be subject to its own ETS, which addresses either the number of animals or the emissions as such – the latter would mainly be simple in large stables, which are largely similar to factories. Alternatively, a concept of area binding (Flächenbindung) could be introduced, i.e. a regulatory limitation of the number of animals per area (the aim here would not merely be to close local nutrient cycles, but to enable drastic emission reductions so that in the end, together with – limited – possible compensation measures, for example in wetlands, zero emissions be the result). Whether one uses an area-binding ratio or an ETS is therefore possibly almost the same – in each case it concerns a cap, which must be monitored and which therefore generates a certain expenditure for authorities and norm addressees (although large stables already have a monitoring system in place for emission control legislation, anyhow). The difference would essentially lie in the trade component that an ETS would have – and in the larger flexibility that makes it economically more attractive for norm addressees. Since the cap would have to be drastically oriented to Article 2 para. 1 PA, there would possibly be greater resistance without the trade component (which enables the compensation between norm addressees in different situations and thus reduces costs). It could also be conceivable to integrate only large animal husbandry facilities into an ETS (or to create a separate ETS – separate from fossil fuels – for them) and to regulate grazing animals and small farmers without a trade component with an area-binding ratio. A combination of an area-binding ratio and a cap-and-trade scheme could be promising as well. Whether it seems more promising to address animals directly or their emissions, cannot be discussed here in detail (the former is easier, the latter is more precise, but much more difficult).

These governance options would not endanger global food security but rather set incentives for a different lifestyle in industrialised countries and upper classes of developing countries. At the same time, other consequences of conventional agriculture like biodiversity loss, soil degradation, water pollution disrupted nutrient cycles etc. are addressed. Mineral N fertiliser, as far as it is based on fossil fuels,

will be taken off the market inherently supporting thus organic farming. Furthermore, the push-back of energy-intensive machinery sets incentives for small-scale farming (as well as potentially lower use of pesticides). Transportation and industrial processing will become more expensive. Pricing fossil fuels also in the agricultural sector would reduce other problems and reduce illnesses (alongside health expenses), because fossil-fuel caused air pollution would be eliminated. Notabene, once again legislative competencies underline that caps are a more realistic approach than levies.

Further Governance Units for Quantity Governance – Besides Fossil Fuels and Livestock Farming?

However, it would be suboptimal to regulate fossil fuels and livestock only, because this could support the run on bioenergy, which is also relevant to climate and biodiversity, or compensate smaller crop yields through higher land use (Hennig 2017; Ekardt and von Bredow 2010; Nonhebel 2004; Rosillo-Calle et al. 2007; Romppanen 2012; overlooked by von Bernstorff 2009). Pricing fossil fuels and livestock farming also does not address land-use emissions which occur otherwise, e.g. through organic N fertiliser, humus degradation and land-use change through grassland ploughing or deforestation. Including the just named other land-use emissions into the EU ETS proves more difficult beyond fossil fuels and livestock farming. Also, beyond agriculture the many different land-use processes which produce emissions and whose exact emissions highly depend on their individual circumstances cannot be monitored as precisely as required for a quantity control mechanism like the EU ETS, not even with satellite-based remote monitoring. Therefore, alternative approaches have to be developed, like a general price on land – or addressing other particularly emission-intensive factors (besides livestock quantities) such as land-use changes or wetland cultivation. Whether this is an economic or – now only complementary (!) to the described big economic approach – a command-and-control approach, e.g. through binding rewetting targets for peatland, requires further debate (under the circumstances “zero fossil fuels” and “zero emissions in one or two decades”). It would be in favour of the latter, if emissions e.g. of wetlands cannot be measured with enough precision to be included in economic approaches and given that there are only small enforcement problems with a command-and-control approach. With regard to the treatment of organic and renewable-based fertiliser, it is also questionable whether the explained economic approach on fossil fuels and livestock emissions is sufficient and whether complementary (!) command-and-control regulations are viable if strengthened in their ambition and enforcement. Discussions to date on land-use governance, for example on national meat taxes, ignore the drastic objective of Article 2 para. 1 PA – and they address too little the weaknesses of national and sectoral regulations (in particular shifting effects). It should be noted that an agriculture oriented to Article 2 para. 1 PA is not about individual agricultural offsets. It is about changing the agricultural sector as a whole.

To sum up: There are clear governance options which are adequate to meet the overarching targets under international law (especially Article 2 para.1 PA). It has been shown that phasing-out fossil fuels and reducing livestock farming is the key pathway setting for sustainability in general and for sustainable agriculture in particular. And it is crucial for finding integrated solutions for various environmental problems. By the same token, quantity governance addressing animal husbandry poses more challenges than just addressing fossil fuels (this is also true with regard to environmental issues in agriculture as a whole). Equally, insufficient effectiveness of past approaches is essentially due to typical governance problems and aspects of motivational problems with regard to different stakeholders. However, since the latter also applies to politicians, rapid change of the current status is not very likely.

4.10 The Complementary Role of Command-and-Control Law, the Example of Biodiversity, Overrated Instruments Like Nudging – Centralised Versus Decentralised Structures

With all this, consistent quantity governance would address various environmental problems at the same time, including the many environmental problems of agriculture. The long-term preservation of biodiversity, fertile soils, drinking water etc. would thus be addressed all at once, because the pricing of fossil fuels and livestock farming would address key challenges. At this point, we have to take a closer look at possible regulatory supplements based on the command-and-control approach. In the following particularly biodiversity and nature conservation in general will be considered. However, similar considerations can also be undertaken regarding other regulatory issues. Therefore, it must be generally worked out which essential instrumental additions an approach requires which focuses on quantity limitation, and which instruments on the other hand are no longer needed.

Complementary Function of Command-and-Control Law

In the following, biodiversity as an example is not considered a protected good in its own right (Chap. 3.4). Rather, biodiversity has far-reaching economic implications and other benefits for humankind. Of course, this does not mean that the entire relevance of biodiversity for humans, their freedom and the preconditions for their freedom can be expressed in monetary values (see already Chap. 3.9). It must also be clear that “biodiversity” does not mean that a particular state of nature (today’s? earlier? how much earlier?) are predetermined. This proves all the more that normative statements regarding this issue are not “natural-scientifically derivable”. This results already from the point that no normativity can be substantiated empirically (Chap. 1.6). The reference to freedom clarifies the relevance of nature conservation first and foremost provides the necessary criterion for the preservation of ecosystem relationships, the factual reality of which in turn can be empirically

researched (critical on other foundations: Chap. 3.4 – as long as statements are made in the sphere of justice and not in the purely subjective sphere of a good life).

In addition to climate and land use issues, the associated loss of biodiversity is one of the central global problems. Today, the interaction between the different sectors is recognised, as are conventional agriculture, compaction, nitrogen inputs, pesticides and climate change, which are the key issues for ecosystems (see Chap. 1.2 and TEEB 2010; Rockström et al. 2009; Ekardt and Hennig 2015; Wilson 2014). It has already become clear that fossil fuels and animal husbandry are key to all this (Chap. 4.9). At the same time, climate protection – in the form of renewable energies – is sometimes avert to nature conservation. As far as genetic diversity is concerned, agricultural breeding practice and research, which is devoted exclusively to marketable species, has led, among other things, to the fact that the ten most cultivated plants now account for almost 90% of world production. In the last 50 years, for example, around 70% of genetic diversity in crops has been irretrievably lost due to industrialised, subsidised agriculture (TEEB 2010).

Biodiversity and ecosystems are ultimately renewable. But even renewable resources can be overused and thus be finite in a way. The states have therefore committed programmatically to halting and reversing the loss of biological diversity by means of the CBD and the Aichi targets (see also COM(2006) 216 final). At the international level, in terms of instruments, financing, advice and monitoring are usually rather discussed than hard instruments.

On the other hand, quantity control for fossil fuels, animal husbandry and possibly agriculture as a whole would also clearly have positive effects on biodiversity (Chap. 4.9). This applies not only to agriculture, but also, for example, to reduced road construction, reduced urban sprawl, limited cultivation of energy crops, etc. If harmful factors such as animal feed, mineral fertilisers, pesticides, fuels and building materials gradually become significantly more expensive, they will also be used less and thus massively relieve the pressure on biodiversity and ecosystems. This focus remains important for the protection of biodiversity and ecosystems, both substantially and spatially, as it addresses rebound and relocation effects, otherwise the effect of the approach is clearly offset. To address an easily measurable control variable such as fossil fuels and livestock farming ensures, as seen, effective implementation, to the benefit of biodiversity. The nature conservation issue is related to climate protection, the nitrogen (surplus) problem, but also to phosphorus, soil degradation and water pollution (Chap. 1.2).

On the other hand, it would not be very promising if biodiversity or ecosystems were directly priced instead of pricing the factors which are damaging nature. This would be done according to their value, whatever it may be, and through economic instruments, be it through political setting or based on an economic valuation (critical Ekardt and Hennig 2015). At first glance, this seems to lead to a situation in which the use of nature becomes economically less attractive and nature conservation thus receives an increased “value”. Currently, there is also a discussion at EU level under the heading of “no net loss”. At the moment, compensation is usually required for every intervention. The debate now is in essence about whether the implementation of nature conservation can be simplified – and thus made more effective. The

biggest problem with the latter approach is the problem of depictability (see Chap. 4.4, alongside the problem of enforcement). Biodiversity and ecosystems are not easily interchangeable nor comprehensible. Thus, also their direct monetarisation through economic assessments is regularly faulty and not readily available. In any case, an adequate assessment of all ecosystems would entail a huge effort, as was already made clear in the section on economic evaluation (Chap. 3.9). At the same time, this suggests small-scale control approaches, through which rebound and shifting effects cannot be avoided, especially if control cannot be carried out comprehensively due to the excessive effort involved. Moreover, in order to be able to finance nature conservation measures, supposedly from the pricing of interventions, approval authorities could develop an interest in raising the number of interventions, which could further fuel rebound effects and weaknesses in implementation. In this respect, the situation in developing countries could be particularly susceptible to abuse.

In contrast, the protection of nature and species under command-and-control law so far is often struggling with the limits of regulatory law that have already been sufficiently explained (Chap. 4.4; on the following see also Ekardt and Hennig 2014, 2015; Ekardt 2001). Rebound effects (increases in efficiency in land use or fertilisation are overtaken by rising prosperity), shifting effects and the classic lack of rigour explain this (ultimately all nature conservation regulations leave room for exemptions). In nature conservation in particular, prohibitions under regulatory law can nevertheless be important in order to enhance the protection of individual components of nature (hot-spot problems). However, this makes sense only in the case of strict and consistently enforced regulations, which is theoretically possible but, as mentioned above, has not been practiced to date (Ekardt 2001). And as long as exceptions remain possible, they will always be used somehow.

Therefore, on the bottom line, pricing of the noxious agents such as fossil fuels and livestock – and not of biodiversity itself – is the essential strategy in nature conservation, especially since this is the only way to address the various governance problems. Meaningful command-and-control supplements for pricing mechanisms in nature conservation can be, for example, restrictions for special areas or on the extraction of waste timber in forests for bioenergy production, since waste timber is useful not only in terms of energy but also for ecosystems. Hot spots generally for supplementary command-and-control law; another good reason is to avoid path dependencies – or a need for very specific regulation of specific issues, e.g. on the framework of different technological approaches of phosphorus recycling (Ekardt et al. 2015). Another example for this is the problem of process emissions (mentioned in Chap. 4.6). It has considerable significance, for example when looking at cement production – although the end of fossil fuels would also eliminate a core aspect of the problem there. Its regulatory (not only supplementary, but also exclusive) regulation, for example with regard to F-gases from refrigerants, makes sense and is already done in the EU, because pricing would be too costly in this case and could in turn create a kind of hot spot problem of its own.

Subsidies, Planning, and Technology Bans

Another important complement to the ETS is spatial planning (Krüger 2016; Ekardt et al. 2015). New land and transport structures, suitable for a reduced focus on fossil fuels, must be developed and pre-structured by the state. The expansion of the electricity grid plays an important role in this (see below). Transport infrastructures also need planning, so that planning supplements would be absolutely necessary even in the case of effective economic governance approaches. If, on the other hand, the aim were to reduce overall transport emissions primarily by means of planning instruments, problems would arise precisely because of the margins inherent to planning. It is worth mentioning that there is an important interaction between economic instruments and planning approaches. The latter only become greatly relevant if economic instruments are established at the same time (because economic incentives trigger the motivation for sustainability-oriented planning). Currently, the creation of e.g. climate-friendly mobility by means of economic governance approaches is declared unacceptable because no city with short distances has been planned yet. Additionally, in isolated cases, complementary total bans on hazardous technologies may be helpful.

In view of nuclear energy (Chap. 1.3) which is more or less greenhouse-gas-free, a cap for fossil-fuel-based emissions has no regulating effect. At the same time, however, nuclear energy is hampering the expansion of renewables because of its inflexibility. Because of the collisions with the expansion of renewable energies and their decentralisation and flexibility alone, the phase-out of nuclear energy should be pushed forward, regardless of the general problems of nuclear energy (Chap. 1.2). From a legal point of view, this is principally permissible (Ekardt 2016a). A plan to phase out coal use is also legally conceivable. However, it would not make much sense beside a sophisticated cap for fossil fuels.

Despite the criticism of environmentally harmful subsidies above, ecological subsidies can also be a useful supplementary instrument in specific cases. In general, however, subsidies and funds (Schalatek 2010) are just as expensive – because somebody has to finance them – and are ecologically less effective as the quantity governance approaches described above, and they can hardly prevent rebound and shifting effects through the approach for individual activities (see on subsidies in detail Ekardt et al. 2015).

Information, Nudging, Adaptation

Despite all limitations to the relevance of the knowledge factor (Chaps. 2.2 and 4.1), there is still a need for some supplementary information, education and planning (Appleton 2002; Ekardt 2016a; Ekardt et al. 2015; Krüger 2016). This is of particular importance to developing countries. Knowledge can be an obvious addition to price pressure, because it provides norm addressees with the necessary information for their future behaviour. However, it remains an open question what extent of informational governance, e.g. via product labelling obligations, is needed to

complement quantity governance effectively. For, with significantly rising resource and energy prices, it can probably be assumed that producers and consumers will increasingly generate and exchange information even without political incentives. If informational instruments are also understood to create opportunity for discourses which, for example, trigger human motivation and thus transport the meaning and attractiveness of (technical and behavioural) change first and foremost, this remains important due to the necessary ping-pong between different stakeholders of social change (Chap. 2.7). Target-group-specific communication can also be important, although the importance of supposedly clear milieus must not be overestimated (Lenz 2015).

A quasi-informational tool, nudging, is currently overestimated as a means of outwitting conceptions of normality and habits in particular (Ekardt and Wieding 2016b). In addition, nudges such as more sustainable factory default settings for printers on double-sided printing may be useful, but the hypothesis that they could shift the mass of occidental affluence towards zero emissions and a significantly reduced ecological footprint is clearly unconvincing. In general, there is again the problem of rebound and shifting effects because nudging addresses individual actions and products. Also, conceptions of normality and habits can be addressed with economic instruments more effectively and with a broader substantial and spatial focus (Ekardt and Wieding 2016b; disregarded in Purnhagen and Reisch 2015 and partly also in Michalek et al. 2015).

Another significant need for complementary instruments should be mentioned here. Ideally, human-made climate change should be completely prevented. However, this can already no longer be achieved in its entirety. Even if we succeed in keeping climate change below the 1.5 degrees limit, there will still be damage (Chaps. 1.2 and 3.8). Article 7 PA therefore recognises that, even if climate protection efforts are significantly increased, an adaptation strategy will be necessary (on adaptation under the Paris Agreement see Ekardt and Wieding 2016a). The expected climate change-related impacts and damages are likely to be unequally distributed globally. But industrialised countries are also facing important changes, albeit to a lesser extent than other countries. This applies, for example, to flood management, settlement development, disaster control, agriculture and forestry, as well as management of migration flows. Above all, it is important to react to the cost problem for the developing countries – a developing country like Bangladesh, which is endangered by rising sea levels, simply has no money to build new dikes on a large scale (on a calculation and on climate justice see Chap. 3.8).

In the industrialised countries, too, the focus is on measures to avert hazards – such as in the event of increasing floods or other extreme weather events – as well as on more precautionary measures that should prevent or minimise the devastation such events cause when they occur. For example, the question arises as to the suitability of regional planning and landscape planning law in terms of adaptation in relation to settlement and infrastructure development. This challenges national and European spatial planning, urban land-use planning, disaster control, flood, and incident law. For water management, for example, it is about safeguarding

groundwater formation despite global warming and preventive water saving. Coastal protection should also be reviewed in this respect.

Adaptation also raises important questions for (especially energy generation) plant law. These are aimed, for example, at cooling water requirements for large power plants; at the further (possibly changing) promotion of hydropower (which raises other concerns, too, such as for nature conservation); at a possible greater decentralisation of the energy sector (fundamental to the development of the electricity sector: Schneider 1999) – which, however, would already be brought about by the proposed ETS – in the sense of greater “catastrophe tolerance”. Most relevant is the question of how the law can provide sufficient incentives to achieve adaptation of expected climate change in agriculture and forestry as well.

Grids, Energy Storage, Power-to-X and Other Options

An important issue of planning law must be considered separately here. In view of the fluctuations of wind and solar energy, security of supply in the age of renewable electricity requires not only greater efficiency and frugality but also more power lines and power storage facilities. In addition, greater efficiency, frugality, better feed-in management and technologies such as power-to-X (Bösche et al. 2012) will make a foreseeable contribution to future supply security. At the same time, this opens up another problem: that of the centrality or decentralisation of future energy supply (Bauknecht et al. 2015; Ekardt 2016a; Krüger 2016). This is a controversial issue both for security of supply and for the structure in the energy market. The question also arises as to whether renewable energies are more likely to be generated in many small locations or in huge solar and wind parks.

The current electricity supply system in industrialised countries is characterised by the fact that electric energy is generated in large power stations and delivered from there to households and factories. In particular, nuclear and coal-fired power plants generate large quantities of electricity in one central spot, and once generated, the energy is routed to the consumer via a top-down supply grid. On the other hand, for a renewable electricity supply, the new question arises whether the accustomed centrality should possibly be overcome in favour of an increase in decentralisation.

Replacing nuclear and coal-fired power plants with huge desert or offshore wind projects is a continuation of a centralism that could become problematic for various reasons. They are more susceptible to supply disruptions. In addition, an energy dependency could develop if domestic energy sources were neglected in favour of major foreign projects, which does not seem unproblematic in view of the political instability e.g. of the North African states. The democratic and market economy aspects of a decentralised supply structure have also already been mentioned. If a strong focus is placed solely on grid construction, it must also be taken into account that new power lines can also be used to keep fossil electricity on the market and export it (which would not seem desirable from a climate policy point of view).

In any case, the future power supply system would have to be able to secure the energy supply even at times when wind and solar energy are not available for a

longer period of time without a simultaneous massive expansion of the power storage system. The more the electricity grid is networked across a large area, the easier it will be to achieve this. Modern storage possibilities for electric energy, on the other hand, enable storing the power generated by renewable energy sources at a certain time when the production level is higher than the current consumption.

For storage facilities, too, there is the alternative between more centralised or decentralised structures, while centrality in turn requires a considerable expansion of the line. An option for the design of the storage system would increasingly aim at storage facilities in the vicinity of decentralised, numerous small energy producers (and accordingly also promote the further technical development of storage facilities suitable for this purpose).

In addition to new energy lines and storage facilities, so-called intelligent grids (“smart grids”) are becoming increasingly interesting. Smart grids are electricity grids that link the behaviour and actions of all users connected to the grid (i.e. producers and consumers as well as actors that both generate and consume electricity). Smart grids can conduct electricity in two directions. In this way, the individual supply units can be optimally connected to each other and to the consumers. Admittedly, a comprehensive and broad deployment is still a long way from reality, and it is unclear how the efforts and benefits of such strategies relate to each other. If, in turn, storage facilities are to be made marketable, this can be done by subsidising research and construction, whereby the latter can also be enforced under regulatory law.

Here are some important aspects on what is new about the analyses in this book to sum up before we switch to a final glance to globalisation in the last chapter: Several typical governance problems (e.g. different types of shifting effects) are identified as core problems of effective governance in achieving given policy objectives. Economic instruments have the major ability to solve governance problems, to adequately address human motivation, to focus on easily graspable governance units such as fossil fuels, and therefore to meet ambitious sustainability objectives. This is the case beyond previous considerations on economic efficiency. Nevertheless, command-and-control instruments have an important potential as an additional tool. Furthermore, it has been shown that (in addition to fundamental rights) binding international environmental law obligations such as those under Article 2 para. 1 PA or the CBD also trigger much more far-reaching obligations in the next one or two decades than is generally assumed. Furthermore, it is shown that the timely complete phase-out of fossil fuels in all sectors (electricity, housing, mobility, agriculture or plastics) as well as the drastic limitation of livestock farming provides a particularly large problem-solving capacity for various relevant environmental problems.

4.11 Free Trade, Global Constitutionalisation, Democracy, and the WTO

In a globalised world of largely open, unquestioned growth-oriented markets, some further open questions arise from the findings so far in this book. These are discussed in the last chapter of this book. Continuing the analysis of competition (Chap. 4.2), growth (Chap. 1.4) and capitalism (Chap. 2.6), we will take a closer look at globalisation. This look further illustrates some of the key insights needed on the most effective approaches to sustainability governance. In addition, it becomes even more obvious that, also from the normative point of view, liberal democracy must be transnational. At the same time, a look at WTO law will underline that one does not have to wait forever and that even without global democracy, sustainability pioneering measures by groups of states – like the concept provided in Chap. 4.6 – are legally permissible.

Globalisation, Free Trade, Competition: A Differentiated Assessment

Since the 1980s, the global shift from state regulation towards self-regulation and competition has led to an increase of interwoven global economic playing field which only has limited political boundaries (on the following Rodrik 2012; Radermacher and Beyers 2011; Ekardt and Schmeichel 2009; Sassen 2008; Bartels 2007a; Bartels 2007b; Brenton 2003). Even if a general critique of capitalism seems dubious (Chap. 2.6), this development massively favours the spatial shifting problem described above (Chap. 4.4) and the emergence of pressure situations which, despite all positive effects, can ultimately become dangerous for freedom and democracy (Chap. 3.2).

Globalisation, as a determining political-economic basic trend of our time, describes a system of worldwide free trade at its core, although it is not limited to economic processes, but can also include cultural pluralisation and further developments such as the increasing global negotiation of environmental problems (Sassen 2008; Rodrik 2012). Economic globalisation has inter alia technical origins in the areas of transport costs and information technology. At its core, however, it does not grow naturally, regardless of how much one can relate new stages of development to certain basic human characteristics (Chap. 2.6), but through political decisions for free trade. As a big market system, the EU was the pioneer in this regard.

At the latest with the founding of the World Trade Organization (WTO), a complex network of global and bilateral liberalisation agreements has also emerged on global scale, promoting a world trade that is as free as possible regarding goods, services, etc. The WTO as the institutional framework for numerous international economic and trade treaties was founded in 1994 after many years of negotiations. In essence, these are therefore a few multilateral agreements between three-quarters of the world's states, supplemented by a large number of bilateral and plurilateral

agreements (Article II WTO Framework Agreement). The most important trade agreement in the WTO is the General Agreement on Tariffs and Trade (GATT), which deals with the liberalisation of international trade in goods. It is institutionalised more formally as most other international treaties with ministerial conferences, general councils, secretariats and court-like dispute settlement bodies, including approaches to the separation of powers (Article III WTO Framework Agreement). It even provides for a relatively formal legislative procedure and majority decisions (Article IX, X WTO Framework Agreement).

Transnational free trade, through the international division of labour, offers considerable opportunities for securing global prosperity and the protection of freedom, as well as for a gentle export of freedom and democracy, as has already been stated for capitalism in general (Chaps. 3.5 and 2.6). For capitalism seems to need legal certainty, free ideas and innovations and therefore likes to link itself with liberal orders, just as market and competition fit well with liberal-democratic basic principles. As already mentioned, however, the competition mechanism requires clear political and legal frameworks and cannot ensure a sustainable, i.e. intertemporal and globally just balance of freedom on its own (Chap. 4.2). This is all the more true since the connection between capitalism, freedom and democracy is on the one hand obvious, but on the other hand not totally inevitable, as various fluctuating developments of the last decades show, especially with regard to China (Acemoglu and Robinson 2012; Deaton 2013; Rodrik 2012; Ekardt 2017; still more optimistic Friedman 1962).

As for capitalism in general, global free trade can also be diagnosed as having been (!) beneficial at least for inhabitants of Western states in sum, especially in socio-economic terms (Acemoglu and Robinson 2012; Deaton 2013; Rodrik 2012). Many jobs have been created in the export sector, and the growing overall prosperity has made it possible to “financially” compensate disadvantaged people. Now, however, with more and more competitive countries in the Global South, development may pose serious problems for the welfare state and even more for climate and resource policy.

Therefore, globalised free trade creates a particular challenge for policymakers (see Chap. 4.8). WTO rules (and the rules of global capital markets) are based on a maximum of “free play of forces” between states in the sense of worldwide competition for business and capital. This tends to favour a race to the bottom between states in terms of (superficially) low-cost-production conditions in the form of low corporate taxes, lenient social and environmental standards and few capital market restrictions (Rodrik 2012; Radermacher and Beyers 2011; Ekardt and Schmeichel 2009; Elliot 1998; see also Krugman 1979; as historical example Ohlin 1933). From the governance point of view, this is a major cause of the above-mentioned spatial shifting effects (Chap. 4.4), and it underlines the need for a transnational approach to climate and resource policy in order to avoid it (Chap. 4.6). Tentatively, it also underlines the need for transnational social policy approaches that hardly exist by now (see in detail Ekardt et al. 2009b). All this also creates a normative problem for the democratic leeway in decision-making that seems to get lost step by step.

It is historically consistent with all experience that markets and free trade can only work with strong state frameworks, functioning institutions, the possibility of social compensation measures, an expanded infrastructure, a functioning education system, the absence of corruption, and much more (Rodrik 2012; unrecognised by Friedman 1962). Notabene, all this does not lead to a radical critique of the idea of competition or of markets (Chaps. 4.2, 2.6, and 1.4) despite all criticism of growth and partly also of capitalism and competition and despite all the (urgent) need for containment.

Of course, globalisation is not the only reason why tax and social security funds in industrialised countries are increasingly under pressure (see Chap. 1.4 with regard to the debate on growth): The labour market is shaped not only by globalisation, but also by demographic change, increasing female employment and continuing technical rationalisation. Germany in particular was not only the world champion of exports for many years, but is also the world champion of rationalisation. The growing demands of citizens also play a role. It is true that the overall problem described primarily arises when the total production costs really differ – i.e. when higher costs of climate and social policies in industrialised countries are not met by more qualified workers (Rodrik 2012). However, Western countries are unlikely to have better work results (and a higher level of education) in the long run than countries like South Korea, China, India or Indonesia.

The pressure put on sustainability as well as on democracy is twofold: it is a legal one and a factual one. Participation in global free trade is no longer legally at the discretion of national politics; rather, participation is determined by international legal regulations under the umbrella of the WTO. The effect of the WTO lies in the legal limits for national trade restrictions, but even more in the fact that it creates global competition at all, which places the dumping problem and thus the global political framing requirement on the political agenda. This is favoured by problems associated with free trade such as asymmetrically structured bilateral trade agreements, debt spirals in national budgets, but also undemocratic structures, cultural and colonialist influences, etc. (Pogge 2008; Ekardt et al. 2009b; Rodrik 2012; Radermacher and Beyers 2011; on TTIP and CETA see Gerstetter 2014; Ekardt et al. 2016).

To conclude: The analyses of globalisation confirm the important thesis of this book that free competition needs stronger regulation. This does not, however, mean the abrogation of globalisation. Furthermore, from the perspective of free trade in times of globalisation, it is confirmed that transnational governance approaches are decisive for sustainability – and for the continued existence of functioning democracies.

WTO Law, International Environmental Law, Human Rights – And Role-Models

Having said all this, transnational relations in terms of sustainability require global regulation not only from a governance perspective. They also require it from justice,

i.e. freedom and democracy aspects. According to the new concept of freedom (in Chap. 3, especially Chap. 3.3), liberal-democratic institutions have to be created wherever they are needed for the protection of freedom. And today, this includes the transnational level as far as transnational problems like climate change are concerned. The point that the principles of liberal democracy also imply a general and not only occasional supremacy of international law over national law and that this can already be read from the liberal constitutions in terms of legal interpretation was discussed in detail elsewhere (Ekardt 2016a, § 7 B. with numerous references). Nevertheless, the whole concept is currently not practically enforceable, since the vast majority of states worldwide – today and in the whole of history of humankind – are not actually democratic (Ekardt 2017).

Nevertheless, the sometimes diffuse international legal debate about global constitutionalism is moving in the right direction (on its genesis see von Bernstorff 2012; on today's discussion Fassbender 1998; Ekardt 2016a, § 7; Petersman 2006; skeptical Koskenniemi and Leino 2002; Koskenniemi 2007; Koskenniemi 2005; Krisch 2010; McGinnis and Movsesian 2004). It is not crucial for the basic idea whether one imagines such a development within the UN or as a gradual expansion of the objectives of the WTO, following the tradition of the EU that started as a mere free market, too (more on this Ekardt 2016a, § 7; Bronckers 2001; Ekardt et al. 2016; Brown and Stern 2008; Brunkhorst 2014; Brown and Stern 2008; Giannattasio 2014; Guzman 2004; focused on social standards Macklem 2002; Busse 2003).

Even today, it can be stated that the WTO free trade rules (see in detail Hoekman et al. 2004; Howse and Regan 2000; Marceau 2001; Jackson 2001; Ekardt 2016a, § 7 B.-C.; Yusuf 1980; McKenzie 2008; Mitchell and Tran 2010) do not in any case prohibit domestic forerunner actions in sustainability. This refers in particular to border adjustments (proposed in Chap. 4.8) by a coalition of the willing, as a complementary tool to quantity governance especially for fossil fuels and livestock farming – that want to prevent emissions from shifting to unwilling third countries. Elsewhere, their admissibility under WTO law was explained in detail (for more details, see Ekardt and Schmeichel 2009; Pirlot 2017; Ekardt 2016a, § 7 C.). According to Article 31 of the Vienna Convention on the Law of Treaties, all international treaties must be interpreted in light of the whole body of international law (Birnie and Boyle 2009; Ekardt 2016a, § 7 B.-C.). Free trade restrictions, such as border adjustments, can on grounds of that be justified using international environmental law such as the Paris Agreement or human rights (Motaal 2001; Ekardt 2016a, § 7 C.; Marceau 2001; Petersman 2006; Tarasofsky 2008). And we have seen in detail that these standards call for a far-reaching sustainability policy (Chaps. 1.2 and 3.8).

The most problematic aspect of the overall justification of border adjustments is that, in order to ensure equal treatment, the EU would have to indicate the energy intensity and climate relevance of all relevant products fairly accurately. In the absence of a more precise indication, it might however be sufficient for the EU to make plausible estimates which would then be treated as valid as long as the states negatively affected by the environmental tariffs do not clearly prove their faultiness (briefly mentioned already in Chap. 4.8). At least the procurement of information on

national standards could be imposed on companies in this respect. And as mentioned above in Chap. 4.8, the calculation problem can be avoided by applying a product-based rather than a production-based approach and counterfactually assume that foreign manufacturers use the best available ecological technology. This would somewhat reduce the effects of the border adjustment, but would in the foreseeable future eliminate all imponderables under world trade law (Becker et al. 2013).

Even if this can often only set an ecological example, individual EU member states may also legally lead the way. As in the case of fundamental rights, the EU member states can already invoke environmental concerns such as climate protection or security of supply as eligible concerns against free trade within the framework of the balancing material in relation to the free movement of goods according to the current ECJ Judiciary (ECJ, Case C-240/83 [1985] ECR 531; ECJ, Case C-463/01 [2004] ECR I-11705). Accordingly, in the *PreussenElektra* decision, the ECJ already recognised environmental concerns as a mandatory requirement, even without recourse to a new, multipolar understanding of freedom (Chap. 3) within the framework of the EU fundamental freedoms (ECJ, Case C-379/98 [2001] ECR I-2099, recitals 73 et seq.).

On the Road to Global Democracy or Back to Autocracy? With a Side Glance at Artificial Intelligence and Sustainability

All this does not mean that democracy is – historically and currently – the most likely form of government in this world. Rather the opposite is plausible, taking into account certain basic human tendencies (Chap. 2), such as group thinking and simple truths (on details see Ekardt 2017; on the threat of post democracy see also Crouch 2004). This frightening descriptive finding, however, does not alter the normative statements made (in Chap. 3).

We have seen: Sustainability needs global regulation. And sustainability and liberal democracy are strongly interrelated. At the end of this book, however, this forces us to take a final look at an issue that is massively inevitably approaching us: the emergence of artificial intelligence and its relationship to sustainability (see Ekardt 2017 below). Perhaps – in a bizarre questioning of the behavioural scientific findings gained earlier – a completely different type of human being can be expected for the future. What might at first sound grotesque and fantastic is by no means totally absurd on closer inspection. This reference to Yuval Harari (2017) does not change the fact that Harari's famous global analysis of the genesis of humankind shows considerable weaknesses despite many interesting aspects. Genes and brain research are overestimated by him, anthropology gets undercomplex, and algorithms are overestimated as a supposed controlling body for complex problems due to uncertainty and lack of numerical form (Chap. 2.3); the consequences of a technological leap to some kind of "homo deus" are underestimated; the distinction of is and ought (Chap. 1.6) as well as the possibility of objective normativity is overlooked (Chap. 3). At the same time, a strong ecocentric ethics is postulated by Harari (in contradiction to the argued denying of objective normativity), which, in

addition, proves little familiarity with the philosophical discourse on normativity (Chap. 3.4). Furthermore, environmental problems and the persistence of diseases, wars and hunger are underestimated.

Nevertheless, Harari (2017) is right: Genetic research, evolutionary research, brain research and the development of artificial intelligence have made leaps in development in recent decades. The human genome is increasingly deciphered step-by-step, and the neurophysiology of brain waves is increasingly better understood. Interventions that influence our body, our mood and our decisions are already possible today. The first changes in the genetic material seem already possible today, and even manifest feelings such as fear can suddenly be influenced if certain electrical signals are applied to the head. Some even believe that, 1 day, we will be able to stop the ageing of human body cells permanently through genetic changes and the use of nanorobots in the body. However, this would not be the first time that evolutionary and brain research overestimated their potential and the impact of a break-through (Chap. 2.3). For example, the essence of what consciousness and spirit actually are, is still largely unknown, in spite of all neurophysiological analyses. Therefore, it remains an open question whether, 1 day, people can actually be physically and character-wise designed and whether the questions of this book will arise under completely changed conditions. It is also unknown whether – as is currently being attempted – computers and the human brain could someday merge and thus turn an Orwellian, all-round transparency (or a dominion of artificial intelligence) into a reality scenario.

Nevertheless, we cannot avoid closely observing these developments today. With all historical experience, technical progress tends to gain a momentum of its own that is difficult to control at a certain point. In any case, technical innovations in the direction described may turn out to be highly ambivalent – or even catastrophic. On closer inspection, it seems to be a very optimistic hope that designed people, manipulated brain waves, a drastically prolonged life, or artificial intelligence could advance altruism, democracy, and reason, if they were to come. Rather, from what we have seen in this book in terms of the human character, it is likely that such innovations will be massively abused and could ultimately undermine the idea of an autonomy-oriented, egalitarian and democratic society. The foundations of the world and the open societies as we know them will erode, if they are divided into tiny elites with superhuman abilities – achieved by genetical or neurological modification – standing against armies of externally guided, manipulated creatures that might simply be rendered useless. Such a world, as much as Woody Allen or Bill Gates may dream of it, would be doomed to destruction in the face of foreseeable conflicts and the population explosion that would probably result from a massively longer lifespan. One cannot completely put such visions – or rather horror scenarios – aside, despite their still somewhat abstract character at the moment. A problem such as supposedly useless human beings is already on the agenda due to much more mundane developments such as increasing automation. In any case, these future perspectives must not divert from the catastrophic, classically human problems we are facing here today. At the moment, no computers with artificial intelligence and no supermen, but quite ordinary homo sapiens threaten our physical

survival and open societies with their short-sightedness and other emotional characteristics. Moreover, it is not very likely at the moment that wonder technologies will solve our ecological problems. Here and now, our decisions count. Our future is still in our own hands.

Repetition Questions

1. Which concepts of governance are there, and how does justice relate to governance? (Chaps. 1.6, 1.7, and 4.1)
2. Do education, advertising, corporate social responsibility and sustainable consumption solve the problem of sustainable governance, and to what extent is a chicken-and-egg problem problematic in this regard? (Chaps. 4.1 and 4.2)
3. Which role do the Sustainable Development Goals play, and how is the Paris Agreement significantly more relevant for sustainability? (Chap. 4.3)
4. Which fundamental governance problems must be avoided when choosing policy instruments for more sustainability? (Chap. 4.4)
5. Which (especially) sustainable governance instruments are there, and to what extent can economic instruments take particular account of human motivation, governance problems and liberal democracy? (Chaps. 4.4 and 4.5)
6. What might a new approach to sustainability governance look like (focused on fossil fuels and livestock), and which role do border adjustments have to play? (Chaps. 4.6 and 4.8)
7. Which distributional effects does sustainability policy have – and which distributional effects do the sustainability problems themselves have? (Chap. 4.7)
8. How could integrated solutions for various sustainability problems work, and to what extent does land use play a role? (Chap. 4.9)
9. Why is command-and-control law important for sustainability alongside economic policy instruments? (Chap. 4.10)
10. How does sustainability relate to free trade, global constitutionalisation and WTO law? (Chap. 4.11)

Bibliography¹

Aasrud, André/ Baron, Richard/ Buchner, Barbara/ McCall, Kevin: Sectoral market mechanisms – issues for negotiation and domestic implementation, 2010, <http://www.oecd.org/dataoecd/3/28/44001884.pdf>.

¹In accordance with legal practice, parliamentary, governmental and EU Commission documents as well as laws and judgments are not listed in the bibliography, as they can be found unequivocally on the basis of the reference given in the continuous text or via the general search engines. The last access date for all internet sources is 31/07/2018.

- Acemoglu, Daron/ Robinson, James: *Why Nations Fail. The Origins of Power, Prosperity and Poverty*, London 2012.
- Acworth, William et al.: *Emissions Trading and the Role of a Long Run Carbon Price Signal: Achieving cost effective emission reductions under an Emissions Trading System*, Berlin 2017.
- Altrock, Martin: *Will a Feed-in Tariff Law Promote the Development of Bioenergy in Germany without Compromising the “Greenness“ of Biogas?*, *Renewable Energy Law and Policy* 2010, 61 et seq.
- Altwater, Elmar/ Brunnengräber, Achim (Ed.): *After Cancun. Climate Governance or Climate Conflicts*, Wiesbaden 2011.
- Altwater, Susanne/ Dooley, Elizabeth/ Roberts, Ennid: *Legal Instruments to implement the objective “Land Degradation Neutral World” in International Law*, UBA-Texte 19/ 2015, Dessau-Roßlau 2015.
- Angelo, Mary Jane/ Du Plessis, Anel: *Research Handbook on Climate Change and Agricultural Law*, Florida 2015.
- Appleton, Asheline: *Environmental Labelling Schemes: WTO Law and Developing Country Implications*, in: Sampson, Gary P./ Chambers, Bradnee W. (Ed.): *Trade, Environment, and the Millennium*, Tokio 2002, pp. 195 et seq.
- Bailey, Ian: *Neoliberalism, climate governance and the scalar politics of EU emissions trading*, *Area* 2007, pp. 431 et seq.
- Bartels, Lorand: *The Trade and Development Policy of the European Union*, *EJIL* 2007a, pp. 715 et seq.
- Bartels, Lorand: *The WTO Legality of the EU’s GSP+ Arrangement*, *JIEL* 2007b, pp. 869 et seq.
- Bauknecht, Dierk/ Vogel, Moritz/ Funcke, Simon: *Energiewende – zentral oder dezentral?*, Darmstadt 2015.
- Becker, Benjamin/ Richter, Caspar: *Klimaschutz in Deutschland – Realität oder Rhetorik?*, *Momentum Quarterly* 2015, pp. 3 et seq.
- Becker, Daniel/ Brzeskot, Magdalena/ Peters, Wolfgang/ Will, Ulrike: *Grenzausgleichsinstrumente bei unilateralen Klimaschutzmaßnahmen*, *Zeitschrift für Umweltpolitik und Umweltrecht* 2013, pp. 339 et seq.
- Becker, Gerhold: *Moral Leadership in Business*, *Journal of International Business Ethics* 2009, pp. 7 et seq.
- Bedall, Philip: *Climate Justice versus Klimaneoliberalismus?*, Bielefeld 2014.
- Bernauer, Thomas/ Schaffer, Lena: *Climate Change Governance*, CIS Working Paper No. 60, Zürich 2010.
- von Bernstorff, Jochen: *Georg Jellinek and the Origins of Liberal Constitutionalism in International Law*, *Goettingen Journal of International Law* 2012, 659 et seq.
- von Bernstorff, Jochen/ Dann, Philipp: *Reforming the World Bank’s Safeguards. A Comparative Legal Analysis*, 2013.
- von Bernstorff, Jochen: *Social Rights and WTO-Law. Is socio-economic Certification of Bioenergy compatible with International Trade Law?*, *Verfassung und Recht in Übersee* 2009, 477 et seq.
- Biermann, Frank et al.: *Earth System Governance. Science and Implementation Plan of the Earth System Governance Project*, IHDP-Report No. 20, Bonn 2009.
- Binswanger, Hans Christoph/ Frisch, Heinz/ Nutzinger, Hans: *Arbeit ohne Umweltzerstörung*, Frankfurt a.M. 1989.
- Birnie, Patricia W./ Boyle, Catherine: *International Law and the Environment*, Oxford 2009.
- Black, Celeste: *The use of market based mechanisms to bolster forest carbon*, in: Kreiser, Larry et al. (Ed.): *Environmental Taxation and Climate Change*, Cheltenham 2011, pp. 150 et seq.
- Bösche, Eyk/ Ponder, Anika Nicolaas/ Thomas, Henning: *Power to Gas. The Legal Framework for a Long-Term Energy Storage Technology in Germany*, *Renewable Energy Law and Policy* 2012, pp. 159 et seq.
- Bosnjak, Niko: *Ein Emissionshandelssystem der ersten Handelsstufe. Rechtliche, politische und ökonomische Aspekte eines Gesetzgebungsvorschlags*, Marburg 2015.

- Brander, Luke: Kyoto Mechanisms and the Economics of Their Design, in: Faure, Michael/ Gupta, Joyeeta/ Nentjes, Andries (Ed.): *Climate Change and the Kyoto Protocol. The Role of Institutions and Instruments to Control Global Change*, Berlin 2003, pp. 31 et seq.
- von Bredow, Hartwig: *Energieeffizienz als Rechts- und Steuerungsproblem. Unter besonderer Berücksichtigung der erneuerbaren Energien*, Marburg 2013.
- Brenton, Paul: Integrating the Least Developed Countries into the World Trading System: The Current Impact of European Union Preferences under „Everything But Arms”, *JWT* 2003, pp. 623 et seq.
- Bronckers, Marco: More Power to the WTO?, *JIEL* 2001, pp. 41 et seq.
- Brown, Andrew G./ Stern, Robert M.: What are the issues in using trade agreements to improve international standards?, *WTR* 2008, pp. 331 et seq.
- Brunkhorst, Hauke: *Europe at Crossroads – Between the Kantian Mindset of Democratic Capitalism and the Managerial Mindset of Capitalist Democracy*, AVR 2014, pp. 25 et seq.
- Busse, Matthias: Do Transnational Corporations Care about Labor Standards?, *Journal of Developing Areas* 2003, pp. 39 et seq.
- Bussemer, Thymian: *Die erregte Republik. Wutbürger und die Macht der Medien*, Stuttgart 2011.
- Caney, Simon: *Climate Change and Non-Ideal Theory: Six Ways of Responding to Noncompliance*, in: Heyward, Clare/ Roser, Dominic (Ed.): *Climate Justice in a Non-Ideal World*, Oxford 2016.
- Chancel, Lucas/ Piketty, Thomas: *Carbon and Inequality – from Kyoto to Paris*, 2015, <http://piketty.pse.ens.fr/files/ChancelPiketty2015.pdf>.
- Coase, Ronald: The Problem of Social Cost, *Journal of Law and Economics* 1960, pp. 1 et seq.
- Cordell, Dana/ Drangert, Jan-Olof / White, Stuart: The story of phosphorus: Global food security and food for thought, *Global Environmental Change* 2009a, pp. 292 et seq.
- Cordell, Dana et al.: Preferred future phosphorus scenarios: A framework for meeting long-term phosphorus needs for global food demand, *International Conference on Nutrient Recovery from Waste Water Streams*, Sydney 2009b.
- Crouch, Colin: *Post-Democracy*, Cambridge 2004.
- Davidson, Kirk: Ethical Concerns at the Bottom of the Pyramid. Where CSR meets BOP, *Journal of International Business Ethics* 2009, pp. 22 et seq.
- Deaton, Angus: *The Great Escape. Health, Wealth, and the Origins of Inequality*, Princeton 2013.
- Deaton, Angus: Weak States, Poor Countries, 2015, <http://www.project-syndicate.org/commentary/economic-development-requires-effective-governments-by-angus-deaton>.
- Edenhofer, Ottmar et al.: Politics matters: Regulatory events as catalysts for price formation under cap-and-trade, *Journal of Environmental Economics and Management* 2016, 121 et seq.
- Ekardt, Felix/ Wieding, Jutta: EU Competition Law, Renewable Energies and the Tendering Model: Quantity Control versus Price Control in Climate Politics, in: Mathis, Klaus (Ed.): *Competition Law and Economics*, Dordrecht 2019, in print.
- Ekardt, Felix: Economic Evaluation, Cost-Benefit Analysis, Economic Ethics: A Critique with Regard to Climate Economics - about Figures in the Sustainability Discourse, Dordrecht 2019, in print.
- Ekardt, Felix/ Wieding, Jutta/ Zorn, Anika: Paris Agreement, Precautionary Principle and Human Rights: Zero Emissions in Two Decades?, *Sustainability* 2018a, pp. 2812 et seq.
- Ekardt, Felix/ Wieding, Jutta/ Garske, Beatrice/ Stubenrauch, Jessica: Agriculture-related climate policies – law and governance issues on European and global level, *CCLR* 2018b, Issue 4.
- Ekardt, Felix: *Kurzschluss. Wie einfache Wahrheiten die Demokratie untergraben*, Berlin 2017.
- Ekardt, Felix/ Wieding, Jutta: Defending Environmental Economic Instruments against the Economists and their Opponents: Transforming the Theoretical Basis of Pricing Natural Resources, in: Mathis, Klaus (Ed.): *Environmental Law and Economics*, Berlin 2017, pp. 83 et seq.
- Ekardt, Felix: *Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel*, 3rd ed. (= 2nd ed. der Neuauflage) Baden-Baden 2016a.
- Ekardt, Felix/ Wieding, Jutta: Rechtlicher Aussagegehalt des Paris-Abkommens. Eine Analyse der einzelnen Artikel, *ZfU Sonderheft* 2016a, pp. 36 et seq.

- Ekardt, Felix/ Wieding, Jutta: Nudging and Environmental Law – Perspectives and Examples, in: Mathis, Klaus/ Tor, Avishalom (Ed.): Nudging, Berlin 2016b, pp. 247 et seq.
- Ekardt, Felix/ Unnerstall, Herwig/ Garske, Beatrice (Ed.): Globalisierung, Freihandel und Umweltschutz in Zeiten von TTIP. Ökonomische, rechtliche und politische Perspektiven, Marburg 2016.
- Ekardt, Felix: Umweltschutz durch Zivilrecht – Nachhaltigkeit durch Kapitalgesellschaftsrecht?, Zeitschrift für Umweltrecht 2016b, pp. 453 et seq.
- Ekardt, Felix/ Klinski, Stefan/ Schomerus, Thomas: Konzept zur Fortentwicklung des deutschen Klimaschutzrechts, Marburg 2015.
- Ekardt, Felix/ Hennig, Bettina: Ökonomische Instrumente und Bewertungen der Biodiversität. Lehren für den Naturschutz aus dem Klimaschutz?, Marburg 2015.
- Ekardt, Felix/ Hennig, Bettina: Chancen und Grenzen kommunaler Klimaschutzkonzepte. Grundprobleme und Beispiele, Marburg 2014.
- Ekardt, Felix/ Heitmann, Christian/ Susnjar, Davor: Sicherung sozial-ökologischer Standards durch Partizipation, Düsseldorf 2012.
- Ekardt, Felix/ van Riesten, Hilke/ Hennig, Bettina: CCS als Governance- und Rechtsproblem, ZfU 2011a, 409 et seq.
- Ekardt, Felix/ Exner, Anne-Katrin/ Albrecht, Sibylle: Climate Change, Justice, and Clean Development. A Critical Review of the Copenhagen Negotiation Draft, Carbon & Climate Law Review 2009a, pp. 261 et seq.
- Ekardt, Felix/ Hennig, Bettina/ von Bredow, Hartwig: Land use, climate change and emissions trading. European and international legal aspects of the post-Kyoto process, Carbon & Climate Law Review 2011b, pp. 371 et seq.
- Ekardt, Felix/ Meyer-Mews, Swantje/ Schmeichel, Andrea/ Steffenhagen, Larissa: Globalisierung und soziale Ungleichheit – Welthandelsrecht und Sozialstaatlichkeit, Böckler-Arbeitspapier Nr. 170, Düsseldorf 2009b.
- Ekardt, Felix/ Schmeichel, Andrea: Border Adjustments, WTO Law, and Climate Protection, Critical Issues in Environmental Taxation 2009, 737 et seq.
- Ekardt, Felix/ von Bredow, Hartwig: Managing the Ecological and Social Ambivalences of Bioenergy – Sustainability Criteria versus Extended Carbon Markets, in: Leal, Walter (Ed.): The Economic, Social, and Political Aspects of Climate Change, Berlin 2010, pp. 455 et seq.
- Ekardt, Felix/ von Hövel, Antonia: Distributive Justice, Competitiveness and Transnational Climate Protection: “One Human – One Emission Right”, Carbon & Climate Law Review 2009, pp. 102 et seq.
- Ekardt, Felix: Steuerungsdefizite im Umweltrecht: Ursachen unter besonderer Berücksichtigung des Naturschutzrechts und der Grundrechte. Zugleich zur Relevanz religiösen Säkularisats im öffentlichen Recht, Sinzheim 2001.
- Ekings, Paul/ Meyer, Bernd/ Schmidt-Bleek, Friedrich/ Schneider, Friedrich: Reducing Resource Consumption. A Proposal for Global Resource and Environmental Policy, in: Angrick, Michael/ Burger, Andreas/ Lehmann, Harry (Ed.): Factor X. Policy, Strategies and Instruments for a Sustainable Resource Use, Dordrecht 2014, pp. 249 et seq.
- Elliot, Kimberly Ann: International Labor Standards and Trade: What should be done?, in: Schott, Jeffrey J. (Ed.): Launching new Global Trade Talks: An Action Agenda, Washington 1998.
- Ewringmann, Dieter et al.: Emissionshandel im Verkehr, Dessau 2005.
- Exner, Anne-Katrin: Clean Development Mechanism und alternative Klimaschutzansätze. Rechts- und Governancefragen, Marburg 2016.
- FAO: World Agriculture towards 2030/ 2050. The 2012 Revision, 2012, <http://www.fao.org/docrep/016/ap106e/ap106e.pdf>.
- FAO: Land resource planning for sustainable land management. Current and emerging needs in land resource planning for food security, sustainable livelihood, integrated landscape management and restoration, Rome 2017a.
- FAO: World fertilizer trends and outlook to 2020, Rome 2017b.
- FAO: Food Losses and Food Waste, 2011, www.fao.org/docrep/014/mb060e/mb060e00.pdf.

- Fassbender, Bardo: The United Nations Charter as Constitution of the International Community, *Columbia Journal of Transnational Law* 1998, pp. 529 et seq.
- Fatheuer, Thomas/ Fuhr, Lili/ Unmüßig, Barbara: Kritik der Grünen Ökonomie, München 2015.
- Felber, Christian: Die Gemeinwohl-Ökonomie. Das Wirtschaftsmodell der Zukunft, Wien 2012.
- Franks, Max/ Edenhofer, Ottmar/ Lessmann, Kai: Why Finance Ministers Favor Carbon Taxes, Even If They Do Not Take Climate Change into Account, *Environmental and Resource Economics* 2015, pp. 1 et seq.
- Friedman, Milton: *Capitalism and Freedom*, Chicago 1962.
- Fry, Ian: More Twists, Turns and Stumbles in the Jungle: A Further Exploration of Land Use, Land-Use Change and Forestry Decisions within the Kyoto Protocol, *RECIEL* 2002, pp. 159 et seq.
- Fücks, Ralf: *Intelligent wachsen. Die grüne Revolution*, München 2013.
- Fuhr, Lili/ Schalatek, Liane et al.: COP 21 and the Paris Agreement. A Force Awakened, Berlin 2016, <http://www.boell.de/en/2015/12/15/cop-21-and-paris-agreement-force-awakened>.
- Garske, Beatrice: Die Gemeinsame Agrarpolitik der Europäischen Union 2013 – ein Schritt in Richtung nachhaltige Landwirtschaft?, in: Garske, Beatrice/ Hoffmann, Kristin: *Die Gemeinsame Agrarpolitik nach der Reform 2013 – endlich nachhaltig?*, Halle 2016, pp. 6 et seq.
- Garske, Beatrice: Joint Implementation. Ökonomische Klimaschutzinstrumente und Technologiediffusion in Transformationsstaaten, Marburg 2013.
- Gawel, Erik/ Korte, Klaas: Regionale Verteilungswirkungen und Finanzierungsverantwortung – Bund und Länder bei der Strom-Energiewende, in: Müller, Thorsten/ Kahl, Hartmut (Ed.): *Energiewende im Föderalismus*, Baden-Baden 2015, pp. 145 et seq.
- Gerstetter, Christiane: Regulatory Cooperation under TTIP – a Risk for Democracy and National Regulation?, Berlin 2014, http://www.ecologic.eu/sites/files/publication/2014/regulatory-cooperation-under-ttip-gerstetter-2014_0.pdf.
- Gesang, Bernward: *Klimaethik*, Berlin 2011.
- Getliffe, Kate: Proceduralisation and the Aarhus Convention, *Environmental Law Review* 2002, 101 et seq.
- Giannattasio, Arthur Roberto Capella: *International Human Rights*, ARSP 2014, pp. 514 et seq.
- Gilbert, Natasha: The Disappearing Nutrient, *Nature* 2009, pp. 716 et seq.
- Global Commission on the Economy and Climate: *Better Growth – Better Climate*, 2015, <http://newclimateeconomy.report/>.
- Gough, Ian: *Heat, Greed and Human Need. Climate Change, Capitalism and Sustainable Wellbeing*, Cheltenham 2017.
- Guzman, Andrew: *Global Governance and the WTO*, *Harvard International Law Journal* 2004, pp. 303 et seq.
- Harari, Yuval: *Homo Deus. Eine Geschichte von Morgen*, München 2017.
- Hehn, Nina: Postfossile Stadtentwicklung. Rechts- und Steuerungsprobleme einer Umsetzung kommunaler Energiewende- und Klimaschutzkonzepte im Rahmen der Stadtplanung, Marburg 2015.
- Hennig, Bettina: *Nachhaltige Landnutzung und Bioenergie. Ambivalenzen, Governance, Rechtsfragen*, Marburg 2017.
- Henningson, Stefan/ Hyde, Katherine/ Smith, Ann/ Campbell, Miranda: The value of resource efficiency in the food industry: a waste minimisation project in East Anglia, *Journal of Cleaner Production* 2004, pp. 505 et seq.
- Herrmann, Ulrike: *Der Sieg des Kapitals. Wie der Reichtum in die Welt kam – die Geschichte von Wachstum, Geld und Krisen*, München 2015.
- Heyen, Dirk Arne/ Fischer, Corinna et al.: Mehr als nur weniger. Suffizienz – Notwendigkeit und Optionen politischer Gestaltung, Freiburg 2013, <http://www.oeko.de/oekodoc/1837/2013-506-de.pdf>.
- Hoekman, Bernard/ Michaelopoulos, Constantine/ Winters, L. Alan: More Favourable and Differential Treatment of Developing Countries. Towards a New Approach in the WTO, *World Economy* 2004, pp. 481 et seq.

- Hoffmann, Ulrich: Assuring Food Security in Developing Countries under the Challenges of Climate Change. Key Trade and Development Issues of a Fundamental Transformation of Agriculture, UNCTAD Diskussion Papers, No. 201, Genf 2011.
- Hoffmann, Ulrich: Can Green Growth really Work – and what are the True (Socio-)Economics of Climate Change?, Berlin 2015.
- Howse, Robert/ Regan, Donald: The Product/ Process Distinction – An Illusory Basis for Disciplining ‘Unilateralism’ in Trade Policy, EJIL 2000, pp. 249 et seq.
- Hulme, Mike: Why We Disagree About Climate Change, Cambridge 2009.
- Institute for Advanced Sustainability Studies (IASS): Transgovernance. The Quest for Governance of Sustainable Development, Potsdam 2011.
- International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD): Global Summary for Decision Makers, Johannesburg 2008.
- International Monetary Fund (IMF): How large are global energy subsidies?, 2015, <https://www.imf.org/external/pubs/ft/wp/2015/wp15105.pdf>.
- International Rivers: Bad Deal for the Planet. Why Carbon Offsets Aren't Working and How to Create a Fair Global Climate Accord, 2008, pp. 6 et seq., http://www.internationalrivers.org/files/DRP2English2008-521_0.pdf (zuletzt abgerufen: 13.03.2011).
- IPCC (Intergovernmental Panel on Climate Change): Climate Change 2014, Fifth Assessment Report, Cambridge 2014.
- IPCC: Global Warming of 1.5 Degrees Celsius, Special Report, Cambridge 2018.
- IPCC: Climate Change 2007. Fourth Assessment Report, Cambridge 2007.
- IPCC: Special Report on Land Use, Land Use Change, and Forestry, 2000.
- Ismer, Roland: Klimaschutz als Rechtsproblem. Steuerung durch Preisinstrumente vor dem Hintergrund einer parallelen Evolution von Klimaschutzregimes verschiedener Staaten, Tübingen 2014.
- Jackson, John H.: Comments on Shrimp/Turtle and the Product/ Process Distinction, EJIL 2001, pp. 203 et seq.
- Jäger, Manuela: Indien in den internationalen Klimaschutzverhandlungen. Eine Diskursanalyse, Marburg 2018.
- Joseph, Sally-Ann: Environmental taxes – definitional analysis: behavioural change or revenue raising, in: Kreiser, Larry et al. (Ed.): Environmental Taxation and Green Fiscal Reform. Theory and Impact, Cheltenham 2014, S. 187 et seq.
- Kieckhäfer, Karsten et al.: Prospects for Regulating the CO₂ Emissions from Passenger Cars within the European Union after 2023, Zeitschrift für Umweltpolitik und Umweltrecht 2015, pp. 425 et seq.
- Klingholz, Reiner: Sklaven des Wachstums. Die Geschichte einer Befreiung, Frankfurt a.M. 2014.
- Klinsky, Sonja/ Mehling, Michael/ Tuerk, Andreas: Beyond Déjà Vu. Opportunities for Policy Learning from Emissions Trading in Developed Countries, Carbon & Climate Law Review 2012, pp. 291 et seq.
- Koskenniemi, Martti/ Leino, Päivi: Fragmentation of International Law? Postmodern Anxieties, Leiden Journal of International Law 2002, pp. 553 et seq.
- Koskenniemi, Martti: Fragmentation of International Law. Difficulties Arising from the Diversification and Expansion of International Law, Report of the Study Group of the International Law Commission, 2007.
- Koskenniemi, Martti: From Apology to Utopia, Cambridge 2005.
- Krisch, Nico: Beyond Constitutionalism. The Pluralist Structure of Postnational Law, Oxford 2010.
- Krüger, Heiko: European Energy Law and Policy, Cheltenham 2016.
- Krugman, Paul: Increasing returns, monopolistic competition and international trade, JIE 1979, pp. 469 et seq.
- Lee, Maria/ Abbot, Carolyn: The Usual Suspects? Public Participation under the Aarhus Convention, Modern Law Review 2003, pp. 80 et seq.
- Lenz, Christine: Zur Durchsetzungsfähigkeit von Suffizienzstrategien. Eine Analyse auf der Grundlage von Ansätzen der Neuen Politischen Ökonomie, Marburg 2015.

- Lohmann, Larry: Climate Crisis – Social Science Crisis, in: Voss, Martin (Ed.): Der Klimawandel. Sozialwissenschaftliche Perspektiven, Wiesbaden 2010, pp. 133 et seq.
- Lyster, Rosemary: Separating the Wheat from the Chaff: Regulating Greenhouse Gas Emissions in a Climate of Uncertainty, *Carbon & Climate Law Review* 2007, pp. 89 et seq.
- Macklem, Patrick: Labour Law beyond Borders, *JIEL* 2002, pp. 605 et seq.
- Marceau, Gabrielle: Conflicts of Norms and Conflicts of Jurisdictions. The Relationship between the WTO Agreement and MEAs and other Treaties, *JWT* 2001, pp. 1081 et seq.
- McGinnis, John/ Movsesian, Mark: Against Global Governance in the WTO, *Harvard International Law Journal* 2004, pp. 353 et seq.
- McKenzie, Michael: Climate Change and the Generalized System of Preferences, *JIEL* 2008, pp. 679 et seq.
- Menges, Roland: Freiwillige, verursacher- oder gemeinlastfinanzierte Beiträge zum Klimaschutz? Eine Kategorisierung umweltpolitischer Instrumente auf Basis der Kostenträgerschaft, *Zeitschrift für Umweltpolitik und Umweltrecht* 2006, pp. 61 et seq.
- Meyer von Bremen, Ann-Helen/ Rundgren, Gunnar: Foodmonopoly. Das riskante Spiel mit billigem Essen, München 2014.
- Michalek, Gabriela/ Meran, Georg/ Schwarze, Reimund/ Yildiz, Özgür: Nudging as a new „soft“ tool in environmental policy, Frankfurt/ Oder 2015, https://www.europa-uni.de/de/forschung/institut/recap15/downloads/recap15_DP021.pdf.
- Milne, Janet: Environmental taxes and fees – wrestling with theory, in: Kreiser, Larry et al. (Ed.): Environmental Taxation and Green Fiscal Reform. Theory and Impact, Cheltenham 2014, pp. 5 et seq.
- Mitchell, Andrew/ Tran, Christopher: The Consistency of the European Union Renewable Energy Directive with World Trade Organization Agreements. The Case of Biofuels, *Renewable Energy Law and Policy* 2010, pp. 33 et seq.
- Moreno, Camila/ Speich Chassé, Daniel/ Fuhr, Lili: Carbon Metrics. Global Abstractions and Ecological Epistemicide, Berlin 2015, https://www.boell.de/sites/default/files/2015-11-09_carbon_metrics.pdf.
- Morgenstern, Lutz: One, Two or One and a Half Protocols? An Assessment of Suggested Options for the Legal Form of the Post-2012 Climate Regime, *Carbon & Climate Law Review* 2009, pp. 235 et seq.
- Motaal, Doaa Abdel: Multilateral Environmental Agreements (MEAs) and WTO Rules. Why the Burden of Accommodation Should Shift to MEAs, *JWT* 2001, pp. 1215 et seq.
- Müller, Olaf: Mikro-Zertifikate. Für Gerechtigkeit unter Luftverschmutzern, *ARSP* 2009, pp. 167 et seq.
- Müller, Thomas: Wettbewerb und Unionsverfassung. Begründung und Begrenzung des Wettbewerbsprinzips in der europäischen Verfassung, Tübingen 2014.
- Napoli, Christopher: A Decentralised Approach to Emissions Reductions, *Carbon & Climate Law Review* 2013, pp. 24 et seq.
- Nkonya, Ephraim/ Mirzabaev, Alisher/ von Braun, Joachim (Ed.): Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development, Berlin 2016.
- Nonhebel, Sabine: Renewable energy and food supply: will there be enough land?, *Renewable and Sustainable Energy Reviews* 2004, pp. 191 et seq.
- Obergassel, Wolfgang/ Ott, Hermann et al.: Phoenix from the Ashes. An Analysis of the Paris Agreement to the United Nations Framework Convention on Climate Change, Wuppertal 2016.
- OECD: Biofuels: Linking Support To Performance, 2008.
- Ohlin, Bertil Gotthard: Interregional and International Trade, Cambridge 1933.
- OPTRES: Assessment and optimisation of renewable energy support schemes in the European electricity market, Final Report, 2007.
- Ott, Konrad/ Döring, Ralf: Theorie und Praxis starker Nachhaltigkeit, Marburg 2004.
- Paech, Niko: Liberation From Excess, München 2012.
- Panella, Giorgio/ Zatti, Andrea/ Carraro, Fiorenza: Green, White, and Brown Certificates Working Together. The Italian Experience, *Critical Issues in Environmental Taxation* 2009, pp. 139 et seq.

- Peters, Glen/ Minx, Jan/ Weber, Christopher/ Edenhofer, Ottmar: Growth in emission transfers via international trade from 1990 to 2008, PNAS 2011, pp. 8903 et seq.
- Petersmann, Ernst-Ulrich: Human Rights, Constitutionalism and the World Trade Organization. Challenges for World Trade Organization Jurisprudence and Civil Society, Leiden Journal of International Law 2006, pp. 633 et seq.
- Philibert, Cedric: Commentary: Producing industrial hydrogen from renewable energy, 2017, <https://www.iea.org/newsroom/news/2017/april/producing-industrial-hydrogen-from-renewable-energy.html>.
- Pirlot, Alice: Environmental Border Tax Adjustments and International Trade Law. Fostering Environmental Protection, Cheltenham 2017.
- Platjouw, Froukje Maria: Reducing Greenhouse Gas Emissions at Home or Abroad? The Implications of Kyoto's Supplementarity Requirement for the Present and Future Climate Change Regime, RECIEL 2009, pp. 244 et seq.
- Pogge, Thomas: World Poverty and Human Rights, 2nd ed. Cambridge/ Mass. 2008.
- Purnhagen, Kai/ Reisch, Lucia: Nudging Germany? Herausforderungen für eine verhaltensbasierte Regulierung in Deutschland, Wageningen Working Papers in Law and Governance, Wageningen 2015.
- Radermacher, Franz Josef/ Beyers, Bert: Welt mit Zukunft. Die ökosoziale Perspektive, 2nd ed. Hamburg 2011.
- Reiche, Danyel et al. (Ed.): Handbook of Renewable Energies in the European Union, Frankfurt a.M. 2005.
- Ricardo, David: On the Principles of Political Economy and Taxation, London 1817.
- Ridoutt, Bradley et al.: Areas of concern. A new paradigm in life cycle assessment for the development of footprint metrics, International Journal of Life Cycle Assessment 2015, online.
- Rockström, Johan et al.: A Safe Operating Space for Nature, Nature 2009, pp. 472 et seq.
- Rodi, Michael: CO₂ Emissions Trading in Europe. A Law and Economics Perspective, in: Rodi, Michael (Ed.): Emissions Trading in Europe. Initial Experiences and Lessons for the Future, Berlin 2008, pp. 49 et seq.
- Rodrik, Dani: The Globalization Paradox: Democracy and the Future of the World Economy, Harvard 2012.
- Romppanen, Seita: The EU's Biofuels – Certified as Sustainable?, RELP 2012, pp. 173 et seq.
- Rosillo-Calle, Frank/ de Groot, Peter/ Hemstock, Sarah L./ Woods, Jeremy (Ed.): The Biomass Assessment Handbook. Bioenergy for a Sustainable Environment, Basingstoke 2007.
- Russell-Smith, Jeremy/ Costanza, Robert et al.: Moving beyond evidence-free environmental policy, Frontiers in Ecology and Environment 2015, pp. 441 et seq.
- Sachverständigenrat für Umweltfragen (SRU): Sondergutachten Wege zur 100 % erneuerbaren Stromversorgung, Berlin 2011.
- Sakschewski, Boris: Resilience of Amazon forests emerges from plant trait diversity, Nature Climate Change 2016, pp. 1032 et seq.
- Säll, Sarah./ Gren, Ing-Marie: Effects of an environmental tax on meat and dairy consumption in Sweden, Food Policy 2015, pp. 43 et seq.
- Salter, Raya/ Gonzalez, Carmen/ Kronk Warner, Elizabeth Ann: Energy justice: frameworks for energy law and policy, in: Salter, Raya/ Gonzalez, Carmen/ Kronk Warner, Elizabeth Ann (Ed.): Energy Justice. US and International Perspectives, Cheltenham 2018, pp. 9 et seq.
- Sands, Philippe/ Peel, Jacqueline: Principles of International Environmental Law, 4th ed. Cambridge 2018.
- Santarius, Tilman: Der Rebound-Effekt. Ökonomische, psychische und soziale Herausforderungen für die Entkopplung von Wirtschaftswachstum und Energieverbrauch, Marburg 2015.
- Sassen, Saskia: Das Paradox des Nationalen. Territorium, Autorität und Rechte im globalen Zeitalter, Frankfurt a.M. 2008.
- Schalatek, Liane: A Matter of Principle(s). A Normative Framework for a Global Compact on Public Climate Finance, Washington D.C. 2010.
- Scheidler, Fabian: Das Ende der Megamaschine. Geschichte einer scheiternden Zivilisation, Wien 2015.

- Schmidt-Bleek, Friedrich: Green lies. Nothing for the environment, everything for business – how politics and industry are ruining the world, München 2014.
- Schneider, Jens-Peter: Liberalisierung der Stromwirtschaft durch regulative Marktorganisation. Eine vergleichende Untersuchung zur Reform des britischen, US-amerikanischen, europäischen und deutschen Energierechts, Baden-Baden 1999.
- Schneider, Lambert/ Lazarus, Michael/ Kollmuss, Anja: Industrial N₂O Projects Under the CDM: Adipic Acid. A Case of Carbon Leakage?, Stockholm 2010.
- Schneidewind, Uwe/ Zahrt, Angelika: Damit gutes Leben einfacher wird. Perspektive einer Suffizienzpolitik, München 2013.
- Schomerus, Thomas/ Sanden, Joachim/ Benz, Steffen/ Heck, Andreas: Rechtliche Konzepte für eine effizientere Energienutzung, Berlin 2008.
- Schwerd, Joachim: Der Treibhausgasemissionshandel in evolutionsökonomischer Perspektive, Marburg 2008.
- Schwerdtfeger, Angela: Implementation and the Separation of Powers, in: Lohse, Eva Julia/ Poto, Margherita (Ed.): Participatory Rights in the Environmental Decision-Making Process and the Implementation of the Aarhus Convention – a Comparative Perspective, Berlin 2015, pp. 173 et seq.
- Sharples, Andrew et al.: Future agriculture with minimized phosphorus losses to waters: Research needs and direction, AMBIO 2015, pp. 163 et seq.
- Sinn, Hans-Werner: Das grüne Paradoxon. Plädoyer für eine illusionsfreie Klimapolitik, München 2008.
- Sinn, Hans-Werner: The New Systems Competition, Oxford 2003.
- Spence, Chris/ Kuloesi, Kati/ Gutiérrez, Maria/ Muñoz, Miguel: Great Expectations: Understanding Bali and Climate Change Negotiations. RECIEL 2008, pp. 142 et seq.
- Steinberg, Rudolf: Die Repräsentation des Volkes. Menschenbild und demokratisches Regierungssystem, Baden-Baden 2013.
- Stoll-Kleemann, Susanne/ O’Riordan, Tim: The Sustainability Challenges, Environment 3/ 2014, pp. 34 et seq.
- Stubenrauch, Jessica/ Garske, Beatrice/ Ekardt, Felix: Sustainable Land Use, Soil Protection and Phosphorus Management from a Cross-National Perspective, Sustainability 2018 (Special Issue), pp. 1988 et seq.
- Sukhdev, Pavan: Corporation 2020. Transforming Business for Tomorrow's World, London 2012.
- Sutter, Christoph/ Parreño, Juan Carlos: Does the current Clean Development Mechanism deliver its sustainable development claim? An analysis of officially registered CDM projects, Climate Change 2007, pp. 75 et seq.
- Tarasofsky, Richard: Heating up international trade law: challenges and opportunities posed by efforts to combat climate change, Carbon and Climate Law Review 2008, pp. 7 et seq.
- TEEB (The Economics of Ecosystems & Biodiversity): Ecological and Economic Foundations, ed. by Pushpam Kumar, London and Washington 2010.
- United Nations Convention to Combat Desertification (UNCCD): Global Land Outlook, 2017.
- UNCCD: Desertification Land degradation and drought – some global facts and figures, 2012, <http://www.unccd.int/Lists/SiteDocumentLibrary/WDCD/DLDD%20Facts.pdf>.
- UNCTAD: Trade and Environment Review 2013, 2013, http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf.
- Unnerstall, Herwig: Rechte zukünftiger Generationen, Würzburg 1999.
- Verheyen, Roda: Climate Change Damage and International Law: Prevention Duties and State Responsibility, Leiden 2006.
- Verheyen, Roda: Loss and Damage Due to Climate Change. International Journal of Global Warming 2015, pp. 158 et seq.
- Vogel-Kleschin, Lieske: Sustainable Food Consumption? Claims for Sustainable Lifestyles in between Normative and Eudaimonistic Issues – the Example of Food Production and Consumption, Manuskript, Greifswald 2013.

- Weitzman, Martin: On Modeling and Interpreting the Economics of Catastrophic Climate Change, Harvard 2008, <http://www.economics.harvard.edu/faculty/weitzman/files/REStatModeling.pdf>.
- Weitzman, Martin: Prices versus Quantities, *Review of Economic Studies* 1974, pp. 477 et seq.
- von Weizsäcker, Ernst Ulrich: *Factor Five. Transforming the Global Economy through 80 % Improvements in Resource Productivity*, London 2010.
- Wilson, Edward: *The Meaning of Human Existence*, New York 2014.
- Winkler, Martin: *Klimaschutzrecht. Völker-, europa- und verfassungsrechtliche Grundlagen sowie instrumentelle Umsetzung der deutschen Klimaschutzpolitik unter besonderer Berücksichtigung des Emissionshandels*, Münster 2005.
- World Energy Outlook 2015: Exekutive Summary, http://www.iea.org/publications/freepublications/publication/WEO2015_ES_GERMAN.pdf.
- Yamazaki, Masato: CGE analysis of border tax adjustments, in: Kreiser, Larry et al. (Ed.): *Environmental Taxation and Climate Change*, Cheltenham 2011, pp. 198 et seq.
- Yusuf, Abdulqawi A.: Differential and More Favorable Treatment: The GATT Enabling Clause, *JWT* 1980, pp. 488 et seq.

Summary

(Chapter 1) This book is a contribution to transdisciplinary (especially human-sciences-based) sustainability research, i.e. research that follows substantial issues rather than disciplinary boundaries. It deals with resource and sink problems, climate change in particular, but also with the major effect of fossil fuels (and livestock farming) on various other environmental problems such as biodiversity loss, disturbed nitrogen cycles, soil degradation, etc. In particular, it deals with the conditions of social change, effective political and legal instruments and well-founded and balanced normative objectives, i.e. questions of justice.

In methodological terms, research on transformation and change, or on motives of human behaviour in general, faces particular challenges because common methods for acquiring scientific knowledge such as surveys or experiments are less reliable than generally assumed, and the pursuit of quantifiable and reproducible facts as well as formalised models and scenarios also contain many pitfalls. This is solved by a new pluralistic approach in the present book, with a strong focus on informal qualitative perspectives. This has also consequences for the research on instruments for transformation and change.

As a definition, justice means the rightness of the order of human coexistence, just as truth refers to the correctness of factual statements. Social distributive justice as a category of material distribution issues is only one element of justice. Sustainability is defined as the political, ethical, and legal demand for more intertemporal and global justice, i.e. the need for sustainable ways of production and consumption. In contrast, a three-pillar concept of sustainability is misleading and askew for a number of reasons. Likewise, sustainability indicators are not a convincing alternative to an ethical-legal normativity, even if they are not oriented towards a pillar logic, for a number of reasons.

Taking stock, the usual fixation of the political debate on financial crises, economic growth, social security, war against terrorism and jobs as a constant distraction from the sustainability issue is proving to be problematic. On the other hand, the correct handle on various resource and sink problems is decisive for the lasting and global sustainability of lifestyles and economies. In order to comply with a 1.5-degrees-temperature limit set out in Article 2 para. 1 of the Paris Agreement (PA), fossil fuels will have to be phased out in the areas of electricity, heat, fuel, material use, and agriculture in two

decades. The phase-out of fossil fuels stands for avoiding the particular devastating consequences of climate change such as millions of deaths, wars and civil wars on resources such as food and water which are getting scarcer, migration flows, massive natural disasters, but also for avoiding exploding oil and gas prices, etc. Addressing fossil fuels – and livestock farming – also stands for tackling various environmental problems such as biodiversity loss, disturbed nitrogen cycles or questions of public health. The countries of the EU are by no means “pioneers” in terms of per capita ecological footprint and supposed reductions (which have so far been exclusively the result of arithmetic tricks). The situation is similar for various environmental areas.

As regards sustainability strategies, the purely technological approaches of consistency and efficiency alone (!) are not sufficient. A debate on this only makes sense, if measured against clear targets such as those set out in Article 2 para. 1 PA. With regard to that, the sustainability challenge is simply too great for a purely technological approach. Sometimes, there is also a lack of possible technological options, especially for environmental problems beyond climate change. Behavioural changes (frugality) must therefore always be taken into account, on a voluntarily basis or not, also because of the manifold ambivalences and possibly also overestimations of renewable resources as well as some ecologically and economically rather unsustainable technical options such as carbon capture and storage (CCS), nuclear energy, geo-engineering or massive afforestation. Frugality does not stand for a normative idea of a good life; as such it would not be tenable ethically and legally under the auspices of liberal democracy. A possible overall concept for consistency, efficiency and frugality in relation to the energy-climate topic will be developed during the course of this book.

The necessity of frugality puts sustainability in a tense relationship to the growth idea that dominates everything today, because new technologies are (possibly) growth-compatible, whereas a reduction in the demand for services and products poses a big challenge for growth. The hope that a mere “decoupling” of economic growth and environmental consumption is sufficient implies – in view of the insufficient scope of conceivable technical measures – accepting far-reaching threats to humanity. “Qualitative growth” of a seemingly non-material nature is unlikely to solve these problems. According to all experience such an allegedly non-material growth is partly itself materially shaped. Furthermore, the idea of constantly (and thus exponentially) improving social care services, knowledge of music, enjoyment of nature, health, enjoyment of art, etc. seems extremely difficult.

The gradual transition to a post-growth society – not deliberately, but induced by effective environmental protection – raises a number of questions for the pension system, the state budget, companies, the banking system and especially for the labour market. Concepts for this are still in their infancy; even more so are concepts for the process of transition to a post-growth society. Whether such an economic form could still be called “capitalist” is questionable, but this issue should not be overemphasised. Notabene: Even if frugality is really necessary, a consistent change in sustainability is probably still more economical than a business-as-usual strategy, which would ultimately lead to catastrophic distortions.

In epistemological terms, theoretical, normative and instrumental rationality can be distinguished. Rationality conceived purely empirically by economists,

sociologists and others is misleadingly reduced to facts and preferably countable things. Also, in transdisciplinary sustainability research, another epistemological basis is the distinction of is and ought and – diagonally to this – an objective-subjective distinction. Facts are, in principle, objectively identifiable. Difficulties of proof and uncertainties also play an important role in sustainability issues, but they do not change this basic insight.

Law is ethics in concrete and sanction-reinforced form, while ethics is able to substantiate the basic principles of law on a universal level, if necessary. Beyond that, ethics adds little to the legal argumentation and balancing of different principles. Throughout the entire book, there is thus a parallelisation of statements from an ethical and legal perspective. Contrary to a widespread opinion, there is nothing normative about proposing policy options. Alleged non-objectivity of normativity is not convincing either.

(Chapter 2) Both the slow transition to new technologies and the lack of behavioural changes need explaining. This will only succeed if the many disciplines contributing to behavioural science (sociology, psychology, sociobiology, economics, ethnology, religious studies, history, etc.) are looked at together to form an overarching theory of individual and collective change. On the road to this transformation research, some fundamental methodological problems and categories must be taken into account (see above). The success or failure of the transformation towards more sustainability, which has essentially failed so far, can be explained, like any social condition, in looking at the complex interaction of individuals. Most important for analysing social change are complex interactions of various actors that culminate in vicious circles e.g. of politicians and voters as well as businesses and consumers. The sole emphasis on factors such as political and economic power or the role of consumers leads to abridging analyses. The complex interaction and vicious circles do not arise primarily from a lack of knowledge about sustainability. The relevance of knowledge to behaviour is widely overestimated and it is overlooked that factual knowledge does not prove normative objectives right or wrong.

Important, but sometimes also overestimated, are the factors of self-interest, path dependencies, problems with collective goods, and values – that assume a person who acts consciously and calculatingly throughout. The irrational and unconscious or semi-conscious factors that influence the behaviour of politicians, entrepreneurs, voters/consumers, lobbyists, media representatives, etc. are constantly overlooked. Such factors are conceptions of normality (not to be mistaken for values) and emotional factors such as convenience, habits, a lack of orientation in spatio-temporal distance, denial, a lack of thinking in complex causalities, dissonance of talking and acting, striving for recognition, etc.

All these factors are reflected within an individual and as a structure; the dispute over supposedly individualistic versus supposedly collectivist approaches to explaining behaviour and change is proving to be of little consequence. Generally speaking, having a look at real-life individuals instead of remaining too abstract, makes the real motives more transparent. The emergence of unsustainability can be seen as a prime example of these diverse motivational factors and conditions of social change.

Diagonally to the motivation factors mentioned above, it can be said that a lack of sustainability is based on a mixture of biological, cultural (including economic, e.g. capitalism-related), biographical and external factors. Findings from sociobiology and brain research can contribute to explaining human behaviour; neither their radical rejection nor their overestimation proves to be tenable. However, today, we see a historically unique situation of comprehensive danger to human livelihoods as a particular manifestation of self-interest, conceptions of normality, values, etc. This can only be explained by additional consideration of cultural factors. A special cultural aspect is the genesis of modern economics, natural science and technology in a complex interaction with originally religious, today often secularised values. The objection that people were – so the claim – in reality largely cooperative (or, even more so, altruistic) and only became what they are today through capitalism, proves to be crooked. Such an objection is empirically implausible, and it neglects the – in parts – biological nature of humans. In addition, it mixes the analysis of living conditions of today and the more recent past with living conditions of the Stone Age and forgets that sustainability is not about collaboration in a small group of hunter-gatherers but between billions of people that will never know each other. Furthermore, focussing on (the cultural factor of) capitalism neglects that an economic system consists of complex interactions of managers, workers, trade unions, consumers, politicians setting the framework for economic activities, and people voting these politicians into office.

The findings of happiness research cannot serve as an objection either. They show that people can be happy with different levels of material wealth. However, there is no clear evidence that a change towards sustainability per se makes all people happier; nevertheless, the necessary transformation holds potential for happiness. Despite of all non-sustainable developments, however, the freedom- and wealth-creating effects of capitalist economic activity should not be overlooked.

Consequently, social change in general and transformation towards sustainability in particular are only possible through the interaction of different actors and by influencing those motivational factors which can at all be influenced. Self-interested economic-peace-political, ethical and eudaemonistic (luck-related) considerations could certainly motivate a genuine behavioural and technological change towards sustainability. But for this, self-interest calculations need to be reconsidered, values revised, knowledge used more strongly, path dependencies altered, problems with collective goods addressed, and above all conceptions of normality transformed. This requires a variety of activities by different actors, ranging from completely different policy approaches to the (not verbal or only occasional) establishment of a new day-to-day behaviour of people. Because of the interdependencies, one actor alone cannot bring about the sustainability change. Asking for the one and only relevant actor takes the debate to pointless chicken-and-egg games.

(Chapter 3) Non-sustainable societies can therefore be explained descriptively, but can sustainability be justified as a normative goal? The factual influence of values on our behaviour is limited. But when we ask what is normatively right, talking about values is the crucial level. Sustainability, in the sense of intertemporally and globally tenable ways of life and production, is a normative requirement. In order to

justify this ethically and legally, a new foundation of universal justice is necessary. Common ethical approaches, which are intended to show the possibility of objective normative statements, prove to be not very convincing on closer inspection. The present theory of universal justice explores the limits of normative rationality and demonstrates that there is considerable scope for balancing without rendering normative questions purely subjective. Furthermore, the area of good living proves to be rationally intangible.

The variant of universal justice developed here as the basis of ethics and law and thus also the concretisation of sustainability is a heterodox discourse ethics. It is designed as the basis of a revised ethical and law-interpretive conception of liberal democracy with human rights and separation of powers at the national, European and international level. In particular, the argument that there is no alternative and an elenctic argument justify (a) the possibility of reason in questions of normativity and (b) human dignity, i.e. the respect for the autonomy of the individual, and impartiality as (the only) universal principles of justice that logically cannot be denied without self-contradiction. This proves right not only in discourse, but also in practice and also vis-à-vis merely hypothetical discourse partners, i.e. vis-à-vis all human beings. These principles provide the basis for a comprehensive universal right to liberty, which is not limited to certain areas of life, to a democracy with separation of powers, and to a duty to guarantee all this legally.

This entire approach, centred around the liberal-democratic basic principles of reason, dignity, impartiality and freedom (and democracy with separation of powers), which in their (still unclear) connection appear for the first time with Kant, can be read as crucial modification of classical discourse ethics. In contrast, contextualistic, metaphysical and skeptic (including empiricist, e.g. utilitarian and cost-benefit-analytical) approaches which compete with a liberal-democratic universalism of discourse-ethical character prove to be unconvincing. This also applies to other versions of liberal-democratic theory such as those of Rawls or Sen.

In order to determine concrete sustainability contents, an interpretation of the concept of sustainability itself or of *topoi* such as a legal “state objective for environmental protection” is not very promising, because it remains too vague. Rather, a new ethical and legal interpretation of human rights in the sense of overcoming a primarily economy-oriented understanding of freedom makes sense. This provides an ethically and legally stable basis for sustainability while at the same time overcoming the incompleteness of liberal-democratic philosophies. All statements on justice are statements on the social level. Ethical obligations of the individual that go beyond the obligation to bring about a just – including sustainable – social order are difficult to imagine *inter alia* due to a lack of concreteness under the auspices of sustainability problems as quantity problems. This is one of the reasons why human rights are always conveyed through public authority, even if their origin lies in the relationship between individuals.

In general, human rights prove to be rights to freedom and to the elementary preconditions of freedom. A distinction of negative and positive freedom does not work. The ethical and legal interpretation that human rights only protect selected, supposedly particularly valuable freedom activities, is equally unconvincing. The

human-dignity principle (understood as the required respect for the autonomy of the individual, i.e. the principle of self-determination) and the impartiality principle (understood as the required independence from specific perspectives) are not fundamental rights, nor are they intended to say anything at all about a concrete ethical or legal individual case. Rather, they are the basis for justifying and interpreting freedom and thus also for a sustainability-oriented reinterpretation of freedom, of the rules of balancing, and of democratic institutions. All this and more applies to liberal-democratic nation states, to the EU and also to international institutions and organisations – also based on a further developed figure of general principles of international law.

Ethically and legally (also on a transnational level), as normative essence of sustainability, there is a right to the elementary preconditions of freedom. This means conditions such as life, health, subsistence level in the form of food, water, security, climate stability, elementary education, absence of war and civil war, etc. The protection of other freedom-promoting conditions, on the other hand, has no ethical or legal human-rights status, but nevertheless deserves recognition, albeit not as a duty of the public authorities to act. This is where sustainability concerns are located if they are not elementary to freedom. – The possible alternative to the existing concept of freedom, which would be an ethics of capabilities or need, is rejected due to a number of logical and legal issues, problems of application, and illiberal tendencies.

The freedom outlined in this way, including its elementary preconditions, deserves legal and ethical protection also intertemporally and globally, and thus leads to a human-rights-based theory of sustainability. In particular, arguments for this intertemporal and global extension can be formulated under aspects of potentiality and freedom protection where freedom is endangered. Counterarguments against an intertemporal-global protection of fundamental rights such as the future-individual paradox or the reference to unknown preferences of future generations are ultimately not convincing. The precautionary principle can be classified as a sub-aspect of human rights; it reflects their protection even in uncertain, long-term and multi-causal risk situations. Furthermore, freedom also contains protection by the state, not only defense against the state. These insights are not rendered irrelevant by certain widespread objections to such a multipolar understanding of freedom (e.g. in relation to democracy and the separation of powers). The classical distinctions of action and omission and also deontology versus consequentialism thus latently lose their object. Only in view of all of these steps it is possible to interpret human rights in a manner which includes the protection against climate change, dwindling resources, etc. and thus concrete normative sustainability criteria become conceivable.

Environmental-ethical pathocentrism or eco-centrism can make no additional contribution to the normative theory of sustainability issues, since these approaches prove to be untenable at closer inspection. Nevertheless, environmental protection has a comprehensive ethical and legal justification. In general, freedom is limited only by freedom and the preconditions of freedom of other people, not by any form of common good or the like, which should rather be rejected as a concept. Questions

of the good life elude regulation, which is why the ethical and legal justification of sustainability measures does not refer to the subsequent possibly greater happiness of those whose freedom is restricted. Discourses on frugality and nudging, for example, are often based on false assumptions in this respect. Main issues of the welfare state can be identified as sustainability phenomena, taking the threat of climate change into account, although the possibility of objectively answering distributional questions is often overestimated.

Ethical and legal decisions can only be understood as a balancing situation (between various freedoms, elementary preconditions of freedom, further freedom-promoting conditions and everything that can be derived from all of that). Any sustainability decision is thus marked by normative and factual uncertainties (which is usually overlooked). Concrete problems such as “strong versus weak sustainability” or the relevance of a specific argument can only be meaningfully resolved within this theoretical framework.

The ethical and legal theory of sustainability is also developed as a transformed theory of democracy and of balance of powers. The main victims of today’s unsustainability are not voters of today’s parliaments and governments, but future generations and people in other countries. Sustainability is thus in conflict with democracy, to which it – on the other hand – has an affinity because of the necessity of discourses and learning processes (which also rules out any kind of eco-dictatorship). Institutional innovations compared to the existence of democracies based on separation of powers are only indicated to a limited extent in the context of sustainability. The most important point is to establish liberal-democratic institutions on an international level in addition to the national sphere.

The right balancing rules, which are the very basis for normative sustainability statements, can be obtained through a legal and ethical balancing theory, which goes beyond traditional legal and ethical approaches and sociological risk theory. These balancing rules outline the scope of normatively rational statements which are possible to make e.g. on sustainability and which are based on liberal-democratic principles. Rules of procedure and fact-finding rules can also be derived, as can a new human-rights understanding of the precautionary principle in law and ethics. There are also rules for taking new findings in valuations and facts into account.

In the interplay of the powers (nationally and transnationally), the violation of balancing rules leads to an obligation to make a new decision in compliance with the previously violated rule – and thus ultimately to an obligation to (significantly) more sustainability. Violated rules in terms of sustainability concern e.g. the factual basis of climate policy to date and the polluter pays principle. The most important rule for the context of sustainability is the prohibition to ruin the basis of balancing as such by depriving its physical foundations. In spite of all remaining leeway, this already carries a human rights obligation similar to the extent of the 1.5 degrees temperature limit in Article 2 para. 1 PA. A partly similar statement can be made for other resource and sink challenges, but not for all of them. If using further balancing rules such as the polluter pays principle and economic capacity, it is also possible to give some indications as to how the efforts and costs of mitigation and adaptation should be distributed globally.

All this is also meant as an alternative to the economic cost-benefit analysis, which ultimately represents an empiricist ethics in disguise. It is not only based on a (hidden) untenable normative basic theory and has unsolvable application problems. It also finds itself in insoluble conflicts with a liberal-democratic legal system that does not allocate rights according to solvency and does not primarily organise votes as plebiscitary snapshots.

(Chapter 4) On the basis of the normative theory of sustainability just laid out, effective implementation measures can be identified. In a first step, a number of promising starting points can be identified for individual and entrepreneurial action as well as for educational measures. Education, voluntary corporate social responsibility (CSR) and consumer engagement can play a role, but they cannot eliminate the need to contain capitalist economic activity and daily life through effective policy instruments, especially with regard to sustainability. Knowledge and intrinsic (self-interested or value-driven) motivation alone cannot trigger the necessary transformation. At the level of the individual person or company, it is also not possible to prescribe sufficiently precisely what each of the actors has to achieve individually. In addition, there are some general governance problems with regard to addressing single actions (such as shifting effects and rebound effects: see below).

At the political level, there has been an impressive collection of sustainability programmes and declarations on an international, EU and national level to date, although this collection is conflicting with the still large ecological footprint per capita. This also applies to the much-discussed stipulations in the UN Framework Convention on Climate Change (UNFCCC), in the Kyoto Protocol and now in the Paris Agreement, which sets a very ambitious temperature limit, but falls far short in all details of establishing instruments of implementation. The previous sustainability governance in terms of command-and-control law, information law, subsidy law, and procurement law offers a diverse picture which, overall, is not very effectively measured against the ambitious (!) objectives (and only this way the effectiveness of instruments can be analysed). Keywords for severe governance problems especially with regard to sustainability include direct and indirect rebound effects (which also include wealth effects), resource-related, sectoral, and spatial shifting effects, lack of rigour, enforcement problems and problems of depictability. These governance problems can only be solved if sustainability issues are consistently understood as (mostly) quantity problems and which require ambitious quantity limits. Thus, those need to be established as core instrument of sustainability policy.

The most promising approach of quantity governance in terms of sustainability would be a cap (and trade) approach or a similarly structured levies on central noxious agents. Given this is construed in a substantially and geographically broad way and with a clear orientation towards ambitious goals, the above-mentioned governance problems can be solved. Furthermore, the diagnosed motivational situations of citizens, companies and politicians (self-interest, conceptions or normality, etc.) can be adequately addressed – in a freedom- and democracy-friendly manner. Questions such as “certificate markets or levies”, “overall market or submarkets” or “cost-efficiency” are mostly overestimated, as is the question of which instruments

should be labelled as economic or regulatory. The idea that the controlling effect of prices is only limited (allegedly due to price elasticity of demand) is based on several false assumptions. The existing EU emissions trading system (ETS) in the climate sector, however, solves almost none of the problems just listed, and neither do various tax approaches.

The key instrument for climate protection as well as for other environmental problems would be a strict cap on fossil fuels in line with the temperature limit in Article 2 para. 1 PA. This could be achieved by means of a completely revised emissions trading scheme that integrates all fossil fuels (instead of merely some industrial sectors) and commits to strict caps and closed loopholes. This could be started by the EU and other willing states and thus gradually removing fossil fuels from the market within two decades. For individual citizens and businesses, this would result in increasing and soon relatively massive price incentives in favour of more efficiency, more renewable resources and, as is mostly neglected, frugality (whose necessity due to the very ambitious target is typically ignored in the economic discourse). The approach could gradually be extended to a global scale. The revenues of the system would essentially contribute to financing mitigation and adaptation in the participating countries of the Global South. An important complementary instrument are border adjustments towards non-willing states for imports and exports. Shifting effects for emissions or resource consumption (and competitive disadvantages) are thus avoided, and pressure is exerted on other states to participate in the system. At the same time, the economic viability of an effective sustainability policy can be demonstrated, ultimately paving the way for later global agreements.

A quantity-controlling approach can be even advantageous from the point of view of social distribution, especially on a global scale, but also with regard to social inequalities within industrialised countries. It addresses both the long-term fatal social impacts of climate change and resource depletion as well as poverty reduction in developing countries. In addition, the model favours the establishment of administrative, educational and welfare institutions in developing countries, which will probably lead to slower population growth (which, like demographic change in general, is overinflated as a cause of problems and too little recognised as their consequence). Furthermore, in the North and South, permanently available and affordable energy is secured, a global race to the bottom in terms of eco-social standards is avoided, and positive effects on the labour market are also likely. In addition, compensation on a global scale and to a lesser extent also for the socially weaker in the industrialised countries is conceivable from the revenues of a quantity governance system. Global concepts for resource and sink problems can thus be linked to combatting poverty.

If an integrated solution is to be sought for various environmental problems (climate, biodiversity, nitrogen, phosphorus, soils, water), a rapid phasing-out of fossil fuels is key. But a cap for livestock farming is similarly important. In connection with capping fossil fuels, this would trigger far-reaching changes also in agriculture, e.g. in the direction of organic farming, pasture farming and significantly lower consumption of animal food, which would in total greatly relieve biodiversity, soils,

water, nitrogen (and phosphorus) cycles and public health. Other pricing instruments are also conceivable, at least for soils.

In addition, in order to avoid hot spot problems and path dependencies, a number of supplementary command-and-control rules and prohibitions remain important in the area of sustainability, for example as additional tool to save biodiversity. This would, however, be more selective and, moreover, would involve stricter and more stringent regulatory law in terms of content and enforcement than is currently the case. The same applies to informational and planning instruments. In contrast, direct pricing of control variables that are difficult to grasp, such as biodiversity, is not very effective.

A sustainability policy that is pursued by a group of willing states has to assert itself against a global, borderless world economy. Cross-border free trade in particular has typical social and ecological defects and calls for regulatory containment of capitalist economic activity. This is true not only in terms of sustainability (in order to avoid shifting effects) but also in terms of democracy which is put under pressure by globalisation minimising the decisive power of domestic parliaments (legally and factually). The current state of establishing global liberal-democratic institutions is ethically and legally only partially compatible with the justification of a universal, global and intertemporal liberal-democratic law and ethics. At least, a sustainability pioneering role of some states is not prohibited under international trade law, including border adjustments for imports and exports. All in all, a categorical rejection of free market systems remains unconvincing even considering the concept of free trade.

The theory of sustainability presented in this book offers some new aspects (based on my earlier publications, especially those in German), which are of considerable importance for various human sciences:

1. A revised justification for a (heterodox discourse-ethical) universalism is offered, i.e. for why and to what extent normative questions can be objectively decided with reasons.
2. A new concept of freedom is offered, which on the one hand is comprehensive and on the other hand does not lack the legal background and the differentiation that is necessary to make it matter.
3. On the basis of these points, a system of liberal-democratic decision-making is developed which neither overestimates the exact decidability of single questions nor is restricted to very vague statements like many ethicists, nor does it rely on cost-benefit-analyses (which are easily attackable). This includes clearly derived outer boundaries of balancing.
4. A complex behavioural theory (based on methodological triangulation) is offered on how human motivation and individual and social change work without the constraints of economic, sociobiological, sociological etc. approaches – without an unconvincing dichotomy of individual versus structure – and without relying too heavily on experiments and surveys.
5. Several typical governance problems (e.g. different types of shifting effects) are identified as core problems of effective governance in achieving given policy

objectives. Economic instruments have the major ability to solve those governance problems, to address human motivation adequately, to focus on easily graspable governance units such as fossil fuels, and to, therefore, meet ambitious sustainability objectives. This is the case given that they are established on a broad geographical and substantial scale – beyond previous considerations on economic efficiency.

6. It is shown that (in addition to human rights) binding obligations under international environmental law, such as those under Article 2 para. 1 PA or under the CBD, trigger much more far-reaching obligations in one or two decades than generally assumed.
7. It is shown that the timely complete phase-out of fossil fuels in all sectors (not only electricity, but also heat, mobility, agriculture or plastics) as well as the drastic limitation of livestock farming provides a particularly large problem-solving capacity for various environmental problems.
8. A necessary (but not the only) sustainability strategy is frugality; its post-growth implications are considerable but not insoluble.
9. One should stop believing the empiricist fairy tale that human scientific research can and must be based solely on facts – or even on quantifiable and reproducible facts.

Glossary

Balancing means weighing different normative goods. It is inevitable with regard to normative decisions, ethically and legally. However, the economic cost-benefit analysis is not a convincing balancing theory (Chaps. 3.5 and 3.9).

Balancing rules can be derived from the liberal basic principles of reason, dignity, impartiality, freedom, democracy and separation of powers. They frame the scope of objective statements possible regarding normativity (Chap. 3.6).

Capitalism does not consist solely of the principle of growth, nor is it identical with market economy. The criticism of capitalism partly makes false assumptions and overlooks its potentials (Chaps. 1.4, 2.6, and 4.11).

Command-and-control law – working with bans and obligations – is susceptible to certain governance problems because it focuses on individual products, investments or activities. Nevertheless, it must provide essential additions to economic policy instruments for sustainability (Chap. 4.10).

Cooperation can be driven by self-interest or altruism. Some overestimate and some underestimate the importance of cooperation for human behaviour, inter alia with regard to sustainability (Chap. 2.6).

Culture and biology are the background to all motivational factors – the dispute over sociobiology shows that the dominant desire to latently deny one of the two factors is flawed (Chaps. 2.3 and 2.5).

Consistency, (technological) efficiency and frugality represent three sustainability strategies. The first two focus on technically smarter production and consumption (consistency, for example through recycling). Frugality, on the other hand, focuses on less production and consumption.

Corporate social responsibility and sustainable consumption as an instrument of sustainability rely on voluntary action by companies and consumers. These approaches take too little account of the interaction between the actors, the motivational situation and the difficulties of concretization on the level of single actors (Chap. 4.2).

Economic policy instruments working by means of direct or indirect pricing of resources or sinks – can be designed as quantity control and thus adequately address sustainability as a quantity problem – and they also fit better with human motivation and the liberal basic principles than other governance instruments.

- Empiricism** means an epistemology and at the same time a sceptic theory of justice, which are both not able to convince in essential respects (Chaps. 1.6, 1.7, 3.1, and 3.9).
- Environmental humanities** means research in disciplines such as economics, law, philosophy, political science, sociology, cultural studies, ethnology, etc. on questions of environment and sustainability – preferably from a transdisciplinary perspective (Preface, Chaps. 1.1 and 1.7).
- Epistemology** means the theory of what can be objectively recognised in facts and, if necessary, in norms. This also includes basic distinctions such as objective versus subjective, is versus ought, genesis versus validity (which do not coincide) – and a critique of some aspects of constructivism (Chap. 1.6).
- Fossil fuels** (oil, coal, gas) are the main driver of various environmental problems such as climate change, loss of biodiversity, human diseases, disturbed nitrogen cycles etc. due to their omnipresence in electricity, heat, mobility, plastics and in the agricultural sector (Chaps. 1.2 and 1.3).
- Free trade** and WTO can – in principle – fit well with free democracy, but only with constitutional and sustainable framing (Chap. 4.11).
- Freedom** is the object of human rights. Under the auspices of sustainability, the understanding of freedom must be expanded, inter alia to include the elementary preconditions of freedom, an intertemporal and global dimension and an element of precaution (Chaps. 3.2, 3.3, and 3.4).
- Good life** (roughly equivalent to happiness) is the antonym to justice and describes an area that is legally and ethically inaccessible to any regulation (Chap. 3.4).
- Governance** is about effective means – i.e. policy instruments – to implement policy objectives (and to balance them against other values or objectives) and sustainability strategies resulting from the objectives (Chaps. 1.7 and 4.1).
- Governance problems** such as rebound effects or shifting effects are typical obstacles to effective sustainability policy that can be empirically measured and derived from behavioural research (Chap. 4.4).
- Happiness** is empirically investigated in happiness research. The findings are ambivalent in terms of sustainability – and there is nothing normatively that can be said about happiness in liberal democracy (Chaps. 2.6 and 3.4).
- Human rights** mean (ethically and in national, European and international law) the rights to freedom and the elementary preconditions of freedom. Human rights and fundamental rights are synonymous for the purposes of this book (Chaps. 1.7 and 3.2).
- Individual versus structure** (or micro versus macro) is a popular distinction in research on behaviour and societies (Chap. 2.1), but it is ultimately not feasible.
- Interconnectedness** refers to the way politicians, citizens, consumers, entrepreneurs and other actors influence and depend on each other. It is thus a chicken-and-egg game to ask for the main responsible entity (Chaps. 2.1 and 4.2).
- Integrated solutions** for various sustainability challenges such as climate change, biodiversity loss or disturbed nitrogen cycles are necessary. What is needed is addressing the overarching drivers such as fossil fuels and livestock farming (Chap. 4.9).

- Justice** means the rightness of social order and human behaviour. In contrast, truth means the accuracy of statements about facts. Social distributive justice is a sub-aspect of justice regarding distributional issues (Chaps. 1.6 and 1.7).
- Knowledge and values** are constantly overestimated as motivational factors of human behaviour. But if one does not ask descriptively what drives us in fact, but asks normatively what we should do, values are the sole yardstick (Chap. 2.2).
- Law and ethics** are normative systems, of which law is characterised by greater concreteness and the existence of state sanctions (Chaps. 1.7 and 3.1).
- Liberal democracy** is based on the liberal basic principles of reason, dignity, impartiality, freedom, (representative) democracy and separation of powers (Chaps. 3.2 and 3.5).
- Liberalism, scepticism, contextualism and metaphysics** are different basic approaches to the theory of justice. Only reason-based liberalism can convince (Chap. 3.1).
- Livestock farming** is – besides fossil fuels – the second major driver of various environmental problems (Chaps. 1.2 and 4.9).
- Marxism** is a theory which tries to overcome the distinction between is and ought, but without success – and which empirically and normatively encounters many frictions (Chaps. 2.6 and 3.1).
- Methodology** with regard to sustainability must be multi-methodical and qualitatively oriented in essential parts, for example when it comes to human behaviour and governance. The methodology is different when it comes to normative questions, e.g. the interpretation of the law (Chap. 1.7).
- Motivational factors** help explain the behaviour of citizens, consumers, politicians, entrepreneurs and other actors. They include e.g. self-interest, values, emotions, conceptions of normality, knowledge and structural conditions such as path dependencies and problems of collective goods (Chaps. 2.3 and 2.4).
- Paris Agreement** is the most important global environmental agreement, which is vague in many respects, but sets a very ambitious – and legally binding – climate target in its Article 2 (Chaps. 1.2 and 4.3).
- Ping-pong of change** means that social change is possible in an interplay of interdependent social actors such as politicians, citizens, consumers, managers, etc. (Chap. 2.7).
- Post-growth or degrowth** means an economy without economic growth or even with processes of shrinking – possibly necessary for sustainability, but with considerable and partly unsolved consequences (Chap. 1.4).
- Rationality or reason** means the ability to decide questions based on reasons. A distinction must be made between theoretical, instrumental and normative reason (Chap. 1.6).
- Sustainability** means the expansion of ethics, law and politics in intertemporal and global terms, i.e. intertemporal and global justice. In contrast, a three-pillar model of sustainability is not convincing (Chap. 1.5).
- Sustainability governance** seeks an effective implementation of (human-rights-based) sustainability goals. Caps for fossil fuels and livestock farming play a key role for that (Chap. 4.6).

Sustainable Development Goals have been established by the UN for a bouquet of relevant policy areas. They are legally non-binding and also partly contradictory (Chap. 4.3).

Transdisciplinarity means discussing science not from the perspective of a particular discipline (and its unquestioned dogmas), but on the basis of substantial problems – and thereby incorporating all disciplinary knowledge on these problems. Furthermore, transdisciplinarity is open to knowledge stocks outside the institutionalised scientific system, which is self-evident in an objective concept of rationality (Chap. 1.7).

Uncertainty and risk are characteristic of sustainability issues – with regard to both facts and norms. There are ethical and legal rules for dealing with them (Chaps. 3.6 and 3.7).

Universalism refers to justice in all societies – and globalism designates justice across borders between all societies (Chaps. 3.1 and 3.3).