Socio Economic Effects of Mega Housing Projects on Rural Areas: A Case Study of Rawalpindi and Islamabad

By

Hira Qayyum

(Fall 2018 - U&RP 00000276923)

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Science in

Urban and Regional Planning

Department of Urban & Regional Planning

School of Civil & Environmental Engineering (SCEE)

National University of Sciences & Technology Islamabad, Pakistan

(2022)

This is to certify that the contents and form of

Thesis titled

Socio Economic Effects of Mega Housing Projects on Rural Areas: A Case Study of Rawalpindi and Islamabad

Submitted by

Hira Qayyum

(Fall 2018 - U&RP 00000276923)

Has been accepted towards the partial fulfillment of the

requirements for the degree of

MS Urban and Regional Planning

_____

Dr. Abdul Waheed

Thesis Supervisor,

Department of Urban & Regional Planning,

School of Civil & Environmental Engineering (SCEE)

National University of Sciences & Technology (NUST), Islamabad

Thesis Acceptance Certificate

It is certified that the final copy of MS thesis written by Hira Qayyum (Fall 2018 - U&RP 00000276923) of Urban & Regional Planning (NIT-SCEE) has been vetted by undersigned, found complete in all respects as per NUST Statutes / Regulations, is free of plagiarism, errors, and mistakes and is accepted as partial fulfillment for the award of MS/MPhil degree. It is further certified that the necessary amendments, as pointed out by GEC members of the scholar, have also been incorporated in the said thesis.

Signature: _____

Name of Supervisor: **Dr. Abdul Waheed**

Date: _____

Signature (HOD): _____

Date: _____

Signature (Dean/Principal): _____

Date: _____

Declaration by student

I hereby declare that the thesis “Socio Economic effects of Mega housing projects on rural area: a case study of Rawalpindi and Islamabad city”. Submitted for the degree of Masters in Urban & Regional Planning is my own work except some secondary data and case studies which has been used are duly acknowledged. This thesis has not been accepted for any other degree and is not concurrently submitted for award of other degree.

Signature: _____

Name: Hira Qayyum

ID: 00000276923

Department of Urban and Regional Planning, NIT-SCEE

Acknowledgement

"وماتوفیقیالاباللہ" (*Wamatawfiqiillabillah*) "And my success comes only from God, only from God."

I would like to express my sincere gratitude to my Supervisor Dr. Abdul Waheed, for the continuous support of my Masters study and research. His guidance helped me in all the time of research and writing of this thesis. In the present pandemic situation of COVID-19, his flexible behavior supports me a lot.

Besides my Advisor, I would like to thank the rest of my thesis committee members: Dr. Irfan Rana and Mr. Malik Saqib.

Last but not least, I would like to thank my family: My beloved Mother Mrs. Sughran Qayyum, My sisters Faryal Qayyum and Maham Qayyum and my Husband Mr. Zubair for their kind support and prayers.

(Hira Qayyum)

DEDICATION

This thesis is dedicated to my parents Mr. Abdul Qayyum & Mrs. Sughran Qayyum, and My Uncle Mr. Muhammad Nasir Gulfam for their support and prayers.

Abstract

Housing is not the basic need, it shows the quality of life and living standard. If housing considered in an investment way it promotes economic activities and employment opportunities. Due to rapid urbanization, it become a need to develop new housing projects and housing developments are the outcomes of economic and social activities. Mega housing projects are carried out with the aim of providing adequate housing facilities. Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway. The geographic location of the mega housing projects is influencing nearby rural areas directly and indirectly. These housing mega projects brings a change in settlement patterns, landscape and land use of that area where these projects are located. The main objective of this research is to assess the impacts of mega housing projects on rural areas and which factors attracts these housing projects towards them. For the purpose to know the impacts of mega housing projects on rural area some areas are selected for a case study to conduct this research. To reveal the rural area challenges and opportunities. Environmental impacts of the mushroom growth of Mega housing projects on rural areas are Consumption of land, over extraction of gravel from river beds or ridges, Growth in CO2 emissions, growing consumption of water, Loss of natural habitats and biodiversity, Loss of best agricultural land, increase in soil erosion, increase in the use of water and fertilizer in less productive areas and increase in air pollution. Sample size was 204 estimated by using Slovin's formula. Site selected for the survey was the villages around Mega Housing Projects Sample size is 204, total response was collected are 251.The data collected was analyzed using statistical package for social science (SPSS), Pearson Chi Square test, Composite Index method and

Microsoft Excel. To know the impacts of mega housing projects on rural areas an indicator-based approach has been used. Few indicators were selected after interviewing the experts and from literature review impacts data was collected from the selected area by using Likert scale which is unidimensional scale used to collect respondent's opinion. Results will provide the baseline for indicator-based approach for future research on real estate and its impacts. Education, Health, Market, Social and environment indicator of developed and under developing housing schemes having (p-value < 0.05) shows that factors have significant difference, it means both have different impact on surrounding rural areas. The impact of roads and connectivity, Environment and gender (p-value > 0.05) shows that factors have no significant difference between developed and under developing housing schemes it means that these three indicators of developed and under developing housing areas have same impacts on rural areas. The highest impact factors of attraction of mega housing projects are existing road network and connectivity, Availability of cheap land and largest chunks of land. It means presence of existing road network and availability of land both are the important factors than existing infrastructure, economy, female community, educational institutes and health facilities. While choosing the location of new housing projects these two factors should be prioritized. Furthermore, application of advance statistical analysis techniques can provide a more precise depiction of impacts of these indicators on rural areas.

Table of Contents

Chapter 1: Introduction **1**

1.1 Problem Statement 2

1.2 Research Objectives 3

1.3 Research Questions 4

1.4 Area under study 4

1.5 Approved Housing societies in Rawalpindi Development Authority Jurisdiction 5

1.6 Scope and limitation 5

1.7 Thesis structure 6

Chapter 2: Literature Review **7**

2.1 Socio economic impacts of Mega Housing Projects on Rural areas 9

2.2 Environmental impacts on rural areas 11

2.3 Case study 12

2.4 Key factors influencing the growth of mega housing projects in rural areas 14

2.5 Case study 15

2.6 Villages under study area 16

Chapter 3: Methodology **18**

3.1 Introduction 18

3.2 Research design 18

3.3 Data collection 18

3.3.1 Secondary data 18

3.3.2 Primary data 19

3.4 Interviews 20

3.5 Questionnaire design 20

3.6 Sample size 21

Population size 21
Marginal error 21
Confidence level 22
3.7 Data analysis techniques 22
3.8 Data analysis 23
3.9 Ethical requirements 23
Chapter 4: Results and Discussion 24
4.1 Respondent Details 25
4.2 Location of respondents 27
4.3 Financial Detail of respondents 29
4.4 Occupation Detail of respondents 30
4.5 Expenditure Detail of respondents 31
4.6 Existing condition of water supply and drainage 33
4.7 Existing condition of Utilities 35
4.8 Existing condition of agriculture 36
4.9 Existing condition of mobility 37
4.10 Existing condition of economy 38
4.11 Socio-economic indicators analysis 40
4.12 Chi- Square test 41
4.12.1 Education 42
4.12.2 Health 44
4.12.3 Market 46
4.12.4 Roads and connectivity 49
4.12.5 Social 50
4.12.6 Economy 52

4.12.7 Environmental....54
4.12.8 Gender....56
4.12.9 Overall Impact Assessment....58
4.13 Attracting factor of these mega housing projects around rural areas....62
4.13.1 Roads and Connectivity....64
4.13.2 Land....68
4.13.3 Economy....74
4.13.4 Gender....77
4.13.5 Education....79
4.13.5 Health....83
4.14 Overall attraction factor....85
Chapter 5: Conclusion & Recommendation....88
Recommendation....92
References....94
ANNEXURE....102
ANNEXURE "A"....103
ANNEXURE "B"....113
ANNEXURE "C"....115
ANNEXURE "D"....118

List of Tables

Table 1 Villages Under Study Area 16
Table 2 Respondent Detail 26
Table 3 Detail of Villages 28
Table 4 Financial Detail of Respondents 29
Table 5 Expenditure Detail of Respondents 31
Table 6 Impacts on Water Supply And Drainage 33
Table 7 Impacts on Utilities 36
Table 8 Impacts on Agriculture 37
Table 9 Impacts on Mobility 38
Table 10 Impacts on Economy 39
Table 11 Chi- Square Test Education 43
Table 12 Chi-Square Test on Market 48
Table 13 Chi-Square Test on Roads And Connectivity 49
Table 14 Chi-Square Test on Social Indicator 51
Table 15 Chi-Square Test on Economy 53
Table 16 Chi-Square Test on Environmental Indicator 55
Table 17 Chi-Square Test on Gender Indicator 57
Table 18 Overall Impact Assessment 59
Table 19 Selection of Parameters 63
Table 20attraction of Road and Connectivity 65
Table 21 Composite Index of Road and Connectivity 66
Table 22attraction of Land 68
Table 23 Composite Index of Land 69
Table 24 Attraction of Existing Facilities 71

Table 25 Composite Index of Existing Facilities 72
Table 26attraction of Economy 75
Table 27 Composite Index of Economy 76
Table 28 Impact of Gender 78
Table 29 Composite Index of Gender 78
Table 30attraction of Education Indicator 80
Table 31 Composite Index of Education 81
Table 32 Attraction of Health Indicator 83
Table 33 Composite Index of Health 84
Table 34 Overall Attraction Factor 86

List of Figures

Figure 1approved Housing Societies In Rda Jurisdiction 5
Figure 2 Characteristics of Mega Housing Projects 7
Figure 3 Soil Erosion In Grid Station, Peshawar 14
Figure 4 Factors Influencing The Growth of Mega Housing Projects In Rural Areas 15
Figure 5 Villages Around Housing Schemes 17
Figure 6 Methodology Flow Chart 19
Figure 7 Questionnaire For Socio-Economic Impact 20
Figure 8 Questionnaire For Rural People Perception 21
Figure 9 Analysis of Data 22
Figure 10 Comparison Between Urban, Peri Urban and Rural Areas 24
Figure 11 Location of Respondents 27
Figure 12 Occupation of Respondents 30
Figure 13 Means of Transportation 32
Figure 14 Educational Impacts 42
Figure 15 Mean Value of Education 44
Figure 16 Health Impact 45
Figure 17 Mean Value of Health 46
Figure 18 Market Impacts 47
Figure 19 Mean Value of Market Indicator 48
Figure 20 Mean Value of Roads and Connectivity Indicator 50
Figure 21 Social Impacts 50
Figure 22 Mean Value of Social Indicator 52
Figure 23 Economic Impacts 53
Figure 24 Mean Value of Economy Indicator 54

Figure 25 Environmental Impacts 55
Figure 26 Mean Value of Environmental Indicator 56
Figure 27 Impact on Gender 57
Figure 28 Mean Value of Gender Indicator 58
Figure 29 Attraction of Roads And Connectivity 67
Figure 30 Attraction of Land 70
Figure 31 Attraction of Existing Facilities 73
Figure 32 Attraction of Economy 77
Figure 33 Attraction of Gender Indicator 79
Figure 34 Attraction of Education Indicator 82
Figure 35 Attraction of Health Indicator 85
Figure 36 Overall Attraction Factor 87

Chapter 1: Introduction

Housing is a major concern not only in Pakistan but all over the world because it is the basic need of human being. In Pakistan housing is the enigma and can be considered as a hardest problem to solve. Housing is not the basic need, it shows the quality of life and living standard (Streimikiene, 2015). If housing considered in an investment way it promotes economic activities and employment opportunities (Pereira, 2014). The relation between housing and poverty is very strong (Birch, 2015) .Good quality housing is always associated with infrastructure like water supply, drainage and sanitation, electricity and waste disposal (Ismail, 2015). But this infrastructure has been ignored in developing countries. Hosing in presence of proper infrastructure can provide a wide range of positive impacts like improved health, safety from hazard, security, privacy and social well-being(Walker, 2015). Preferring individual housing on low-cost land is encouraging these Mega housing projects on peri urban land (Cattivelli, 2021).

The main objective of this research is to assess the impacts of mega housing projects on rural areas. Mega projects can be defined as projects those transform landscape directly and intentionally in a clear way and require a large amount human capital, resources, finance and state power along with the usage of heavy equipment and advance technologies.

Mega housing projects are carried out with the aim of providing adequate housing facilities. Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway (Wray, 2000). The geographic location of the mega housing projects is influencing nearby rural areas directly and indirectly. Everything comes naturally with some impacts it can be positive, negative and both positive and negative. These housing mega projects brings a change in settlement patterns, landscape and land use of that area where these projects are located.

If these housing projects would well plan and managed, they left a positive effect on rural areas where, the unplanned projects would have a negative effect on rural areas. Negative effects such as changing land use and cropping patterns, scarcity of water, decreasing arable land and reduction of employment in farming sector (Agnewa, 2013). The direct cost of such projects is paid by the concerned cities; however, the rural areas are also bearing the indirect cost in the form of agricultural land sacrifice(Schmitz, 2017).This type of isolated development needs higher public and private capital and operating cost than compact development (Pramono, 2018). Policy intervention require to turn its negative impacts into positive (Tariq, 2017).On the other hand, due to improvement of economy, people prefer to make their living better in order to move to new sites i.e. isolated housing (Cao, 2020). As these projects are geographically separated, therefore, more requirements arose like, schools, colleges, shopping centers, medical facilities, new roads, sewers and water supply, telecommunication, transportation, Utilities etc. For the purpose to know the impacts of mega housing projects on rural area an area is selected for a case study to conduct this research. The study assesses the effects of mega housing projects on the rural areas around Rawalpindi. To reveal the rural area challenges and opportunities.

1.1 Problem Statement

Rawalpindi is located near Islamabad which is the Capital of Pakistan, both cities are called twin cities. Islamabad and Rawalpindi ae interdependent at each other. Because of its easy access to Capital city and availability of land many housing projects were started in Rawalpindi and some projects are unplanned and it needs to be guided to avoid new problems that can be arise due to ill planning and ignorance of the authority.

Rural areas are covered by greenery and also provide shelters to many animals and birds and also plays a vital role in maintaining the ecological balance (Li, 2020). According to the World Bank Collection of development indicators rural population in Pakistan is

63.33%. Pakistan is the agricultural country and it contributes 21% of the GDP and providing 70% of the total value of exports (Ali, 2018).

The development of mega housing projects on the outskirts of cities provides housing but the developers don't know how the rural areas are being affected (Anderson, 2011). In Pakistan, no progressive research is carried out yet on the Socio-Economic impacts of mega housing on rural areas. World is working on Smart growth, Controlled and Sustainable development but Pakistan is lagging far behind. This study can become a first step to know the pros and cons of mega housing projects on rural areas. Which lead to the policy formulation for these neglected impacts. Rawalpindi has been selected for study and the results of this study will promote Smart growth strategies and to know how rural areas are being affected in Pakistan.

1.2 Research Objectives

This study is going to identify socio economic effects of mega housing projects on surrounding rural area and also which site factors are influencing the growth of mega housing projects. Research questions that are being addressed in the study are:

I. To identify the socio-economic impacts of Mega Housing Projects on Rural areas.
II. To identify the environmental impacts of the mushroom growth of Mega housing projects on rural areas.
III. To identify the key factors influencing the growth of mega housing projects near rural areas.
IV. To identify the rural people's perception on growth of Mega Housing Projects on rural areas.
V. To recommend the strategies for regularize and control the growth of unplanned projects in sub urban areas.

1.3 Research Questions

The objective of this research is to identify socio-economic impacts on rural areas of the mega housing projects and also to know the perception of rural residents. The main objective of the study is following:

I. What are the socio-economic impacts on rural areas of the mega housing projects?
II. What are the environmental impacts of the mushroom growth of Mega housing projects on rural areas?
III. What are the key factors influencing the growth of mega housing projects in rural areas?
IV. What is the rural people's perception on growth of Mega Housing Projects on rural areas?
V. What kind of strategies going to be recommended for regularize and control the growth of unplanned projects in sub urban areas?

1.4 Study Area

The study area which is selected for study is Twin cities, Rawalpindi and Islamabad. There are seven tehsils in Rawalpindi. Rawalpindi, KallarSyeddan, Kahuta, Kotlisattian, Muree, Taxila and Gujarkhan. Rawalpindi is fourth largest city of Pakistan by population and third largest metropolitan area of Pakistan and it falls under the jurisdiction of Rawal Town, Rawalpindi Cantonment Board and Rawalpindi Development Authority (RDA).

Islamabad is the 9th largest city of Pakistan it is 14 kms North East of Rawalpindi on the north eastern fringe of Potohar Plateau of province Punjab. The Capital City is divided into five zones. Zone I and II have been designated as urban development zones and the capital city falls under the jurisdiction of Capital Development Authority (CDA)

List of the Housing projects in the study area is attached in Annexure B.

1.5 Approved Housing societies in RDA Jurisdiction

There are 48 approved housing societies in Rawalpindi Development Authority jurisdiction. Approved Housing societies in Rawalpindi Development Authority Jurisdiction are marked on the Google earth image Figure.

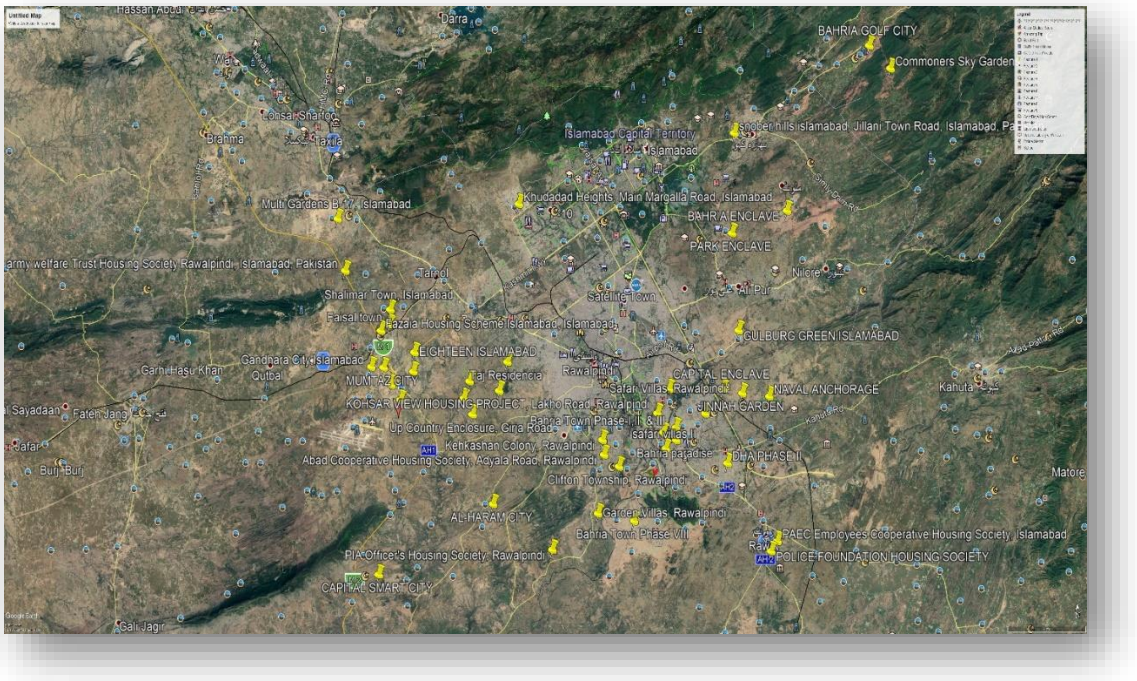


Figure 1Approved Housing societies in RDA Jurisdiction

There are 79 illegal Housing Schemes in RDA attached in Annexure C.

1.6 Scope and limitation

To understand the situation completely and perform a comprehensive study, it would have been better to study the whole Rawalpindi city with adjoining areas. However due to limited human and financial resources only some housing projects and there surrounding rural areas was selected. Sample size and the time of counting survey were also let as minimum due to limited resources and COVID-19situation.

1.7 Thesis structure

A traditional structure was followed while writing this thesis. Stud has been divided into six following chapters.

- Chapter 1 covers introduction including problem statement, Research Objectives, Research Questions, Area under study and Scope and limitation.
- The second chapter is the literature review regarding to the research objective and research questions.
- Third chapter is about methodology followed for this research.
- Forth chapter includes all data collected and results
- The discussion of results with the analysis performed are included in fifth chapter.
- Final chapter concludes the research with conclusion and recommendation. Annexure are attached in the end with included the Questionnaire.

Chapter 2: Literature Review

The development of mega housing projects on the outskirts of cities provides housing but the developers don't know how the rural areas are being affected. Mega housing projects are carried out with the aim of providing adequate housing facilities (Dogan, 2017). Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway. (Wray, 2000). The geographic location of the mega housing projects is influencing nearby rural areas directly and indirectly.

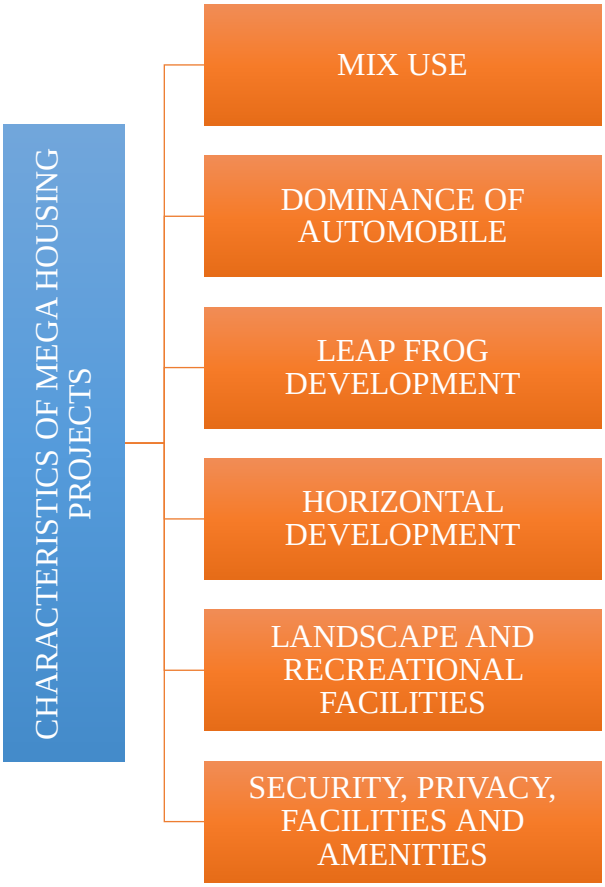


Figure 2 Characteristics of mega housing projects

In Pakistan, no progressive research is carried out yet on the impacts of mega housing on rural areas. These projects have directly impacted on cropping pattern, livestock farming, land use pattern, food and commodity prices, land prices, transportation facilities, and impacts on employment, production and yield of crops, medical and educational facilities,

rural urban migration, impact on arable land, water resources, health quality, living standards and impact on income (Schmitz, 2017).Some negative impacts of these housing projects on rural areas are loss of agricultural land. These projects mostly utilize agricultural land. People of rural areas shifting their occupation from practicing agriculture to nonagricultural activities which results in decreasing in agricultural activities (Feltynowski, 2015). It becomes a main reason of decreasing in some high value or specialty crops (Tarawneh, 2014). This development leads to problems like feeding the population and environmental protection and also results in loss of deforesting and disappearance of wildlife (Svedin, 2017). These projects also may cause pollution from waste generated by households (Hatab, 2019).

Water scarcity is also a major negative impact. Water is the basic need. Available water resources are directed towards these developments stressing the rural areas. Due to lack of available water resources farmers are relying on wastewater for irrigation mostly, which poses high range of health risks (Ungureanu, 2020).

It can also be disrupted existing social, environmental, community and ecological pattern (Rai, 2017). As these areas are automobile dependent and causing air pollution. Social disparities can be increased due to these projects.(Guangyong, 2019) Labor and other people who comes daily in these areas for work are started to living nearby these areas which is a big factor of slums creation. As these projects mostly in Peri-urban areas it affects local climate. Land use Land cover changes are direct and unavoidable consequences of these projects.(Jihong, 2018). For sustainable planning and development monitoring of Land use, Land cover changes is necessary (Chen, 2020).

As these areas are geographically separated, they develop their own resources. In the presence of these facilities rural areas can also get benefits. People of rural areas get benefits from these facilities due to nearby location, inflow and outflow in city core are decreased

and also cope with the city traffic congestion problems. The facilities like markets, restaurants, educational facilities, health facilities, road network and its connectivity, sewer and water supplies, new transportation and communication technologies, employment opportunities for workers and labors facilitates the rural areas and also be a big positive factor to reduce rural urban migration. Commercial activities around rural areas help to get working opportunities. Infrastructure construction, social connection, leisure habits getting benefit from public infrastructure increase their positive impacts (Kapur, 2017).

2.1 Socio Economic Impacts on Rural Areas

Mega housing projects mostly are gated and walled residential neighborhoods, where public spaces are privatized. These projects become a symbol of metropolitan fragmentation and increase the segregation(Abdullah, 2012). These housing projects become a private mean of provision of public infrastructure and produce increased segregation at the local scale (Qiu, 2018).In social science literature a wide range is publicized which focuses on the relationship between these housing projects and social segregation. These housing projects describes both physical and obvious expression of postindustrial societal changes and as a penetration of ideologies of fear and security supported by political and economic actors (Dudzińska, 2018). The housing projects are symptoms of urban pathologies and among the, social exclusion is considered to be important. Housing projects caused residential segregation and low social interaction(Goix, 2005).

In a case study of Southern California shows that the many walled housing projects produce social exclusion and it is important to know how developers usually design them as homogeneous social environment. The study shows if the difference between the housing scheme and its vicinities is higher than the difference between urban areas between two adjacent neighborhoods, then there is a high chance that housing schemes producing increased segregation (Ghonimi, 2010). The design and development of such housing

schemes is a physical barrier and increased a structural social separation. The results show that the housing schemes do not increase segregation on their own because they belong to a cycle of production of urban space made by private strategies and public policies with segregation process (Wu, 2008).The development of these Mega Housing Projects reduces the access of local services and more development will result in lower quality services. There might be two possibilities, the market responds to development by reducing the prices of existing dwelling as an output of increased supply. Other possibility is the demand might decrease as an output of degradation of local attributes. These two possibilities are core to the long-term acceptability of new development(Walker, 2015).

The new housing development causes tension on existing infrastructure and services reduce environmental amenity and become a reason to decreasing the land prices around it (Bover, 2017). New housing projects on peri urban land has pressure on local services and loss of amenity which not only reduce individual welfare but reduce property values (Dowall, 2009). The pressure of the new housing development has an impact on infrastructure, pollution, road safety issues and causing congestion. If these projects are ill planned and ill designed it may fail to foster community. These include economic, social and environmental cost which give push to the cause of reducing the property value around it (Walker, 2015).New housing projects also provide more and better housing to accommodate additional households. It brings possibilities in new infrastructure (Golubchikov, 2012) .These developments also become the source to invest in local shops and services. Some elements like employment opportunities, infrastructure improvements, new green spaces and parks, school and leisure activities support these housing project in an area (Organization, 2017).

2.2 Environmental Impacts on Rural Areas

Consumption of land: Development of mega housing projects required big chunks of land and mostly this land is available at urban fringe and having many trees Greenland, open space and agricultural land which have to be removed for the construction (Koellner, 2006).

Over extraction of gravel from river beds or ridges: For the development of these projects so much material required and the best-known material for construction of roads and buildings is river gravel because the frail fragments and frail of that gravel and sand removed by the flow of water and remaining are the stable ones. Over extraction of gravel from river beds or ridges has many harms like annihilating the river fishes and their breeding, movement and growth of the river path, changing in the river's depth (increased or decreased), increasing in the width of the channel, increasing banks erosion and canal bed disturbance, effecting the number of aquatics and destroying the meanders(Chakraborty, 2013). Growth in CO2 emissions: Due to high radiative forcing and relative longevity in the atmosphere the carbon dioxide is the most anthropogenic greenhouse gas. Fossil fuels consumption is a big contributor to carbon dioxide emissions followed by the land use change (Osobajo, 2020).

Growing consumption of water: Water is the basic need. And available water resources in the rural areas or at urban fridge directed towards these developments which is stressing the rural areas. Increasing the consumption of water by these areas 'farmers are relying on waste water for irrigation mostly, which poses high range of health risks (Maestu, 2015).

Loss of natural habitats and biodiversity: Mega housing project's development causing the fragmentation of large areas of natural habitats by constructing roads, houses and many structures which is causing the losses of native species including insects, birds, animals and plants. Many local and sensitive species are becoming locally extinct because many sensitive species need large and contiguous habitat to maintain the stable populations(Ali,

2018). Loss of best agricultural land: Development of mega housing project causing the loss of best agricultural land, farmland, forest, open spaces, trees and the habitat is the most important issue of these mega housing projects from a land use perspective (Coulibaly, 2020).

Increase in soil erosion: Development of mega housing project causing soil erosion by constructing the roads and buildings that churns up the ground and expose the soil for erosion (WYK, 2007). On the location of the housing project many native landscapes like grassland, forest and trees have to be cleared up that expose the surface of that area to the erosion. Human activities increase the soil erosion 10 times faster than the natural rate. Soil erosion will be increased by time if the soil has very little vegetation cover of crops and plants because the plants and crops protect the soil from erosion (Ali, 2018).

Increase in the use of water and fertilizer in less productive areas: Many fertile areas were occupied by these housing projects so farmers have to use the less productive land to. The cultivation in less productive area increases the use of water and fertilizer. Increase in water usage it can cause water crisis and use of fertilizer effects the crops and environment too (Rehman, 2019). Increase in air pollution: Many components contribute in air pollution but transportation has a strong relation with air pollution. Key contributor in the air quality is vehicles. As these areas geographically segregated, people living in these housing societies are more automobile dependent. The only mode is private cars. In this way they are contributing in air pollution (Manisalidis, 2020).

2.3 Case study

In order to develop more towns enormous areas has to be destroyed. Building and paved streets are replacing the naturally vegetated surfaces. In Peshawar vegetation and soil are being affected by human induced disruption. In decreasing the cover of vegetation major anthropogenic activity is urbanization. Rapidly increasing human population is one of the

big problems of environment. The formation of agricultural land is very important because in coming time this arable land will not increase, it will decrease probably because of these two reasons, erosion and land deterioration. Increasing in number of populations is creating extra pressure on environment. This case study is focusing on the urbanization and vegetation cover in Peshawar. The area is divided into three zones,

Zone 1: Khyber fields

Zone 2: Grid Station

Zone 3: Amman plots

Urbanization exerts a significant effect on biodiversity which is causing the loss of native species and introducing the non-native species (Kugelman, 2013). This study shows the impacts of urbanization which is causing the shifting of population from nearby areas to Sheikhmuhammadi. The ensued number of negative effects on vegetation occurs and also producing noise, waste, dust and is hazardous for the same impacts on construction. Soil erosion in a major naturally occurring process on all land and many agents of soil erosion are responsible for water and waste. In grid station water was causing the soil erosion and this erosion causes a significant amount of soil loss each year in grid station.

Figure 3 Soil erosion in grid station, Peshawar

In recent years local areas of Sheikh muhammadi has seen so many issues like urbanization, grazing, loss of vegetation and soil erosion. The reason of these problem is destructive cutting of vegetation and extreme grazing. The species are becoming endangered like Peganum Harmella. New towns largely disturb the green areas. Over the last ten years the land has convert continually eroded because of vegetation removal and it is totally disturbed by rain (Shuaib, 2019).

2.4 Factors influencing housing projects in rural areas

One of the major key factors of the growth of mega housing project is cheaper land with room to expand. These projects require a lot of land and the peri urban areas or urban fringe have a lot of big chunks of land available. Another factor is access of the main road which encourage the growth of these projects (Li., 2019). Motorways, main roads, railway lines are linked with city center which make the access easy for commuters. Natural and unpolluted environment in the countryside is also influencing the growth of the mega housing projects which attracts the people more (Kanaley, 2016).

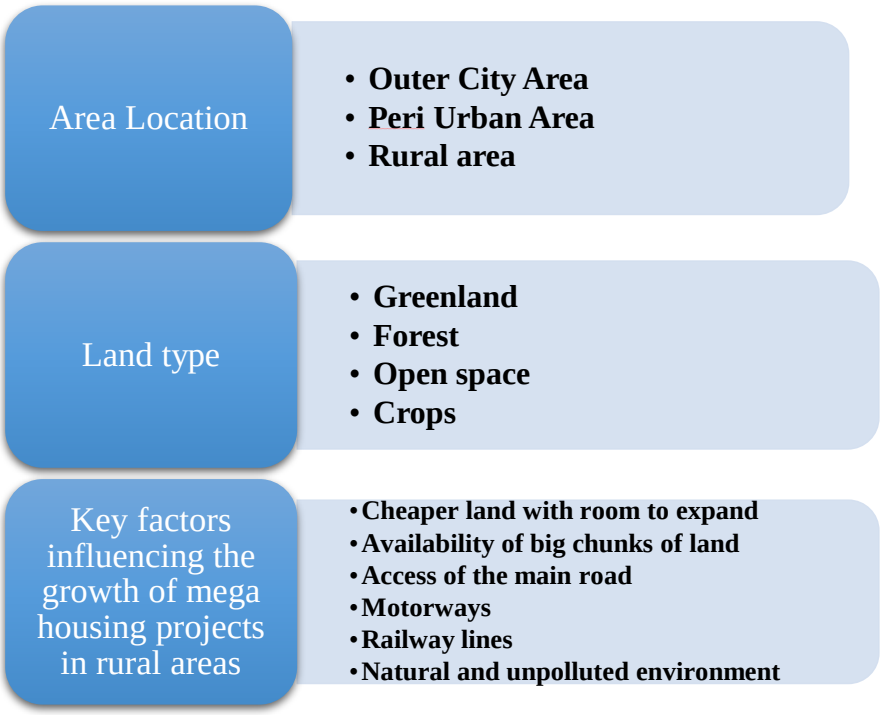


Figure 4 factors influencing the growth of mega housing projects in rural areas

2.5 Case study

Kumasi is the city of Ghana and it is the second largest city of Kumasi which is growing with annual population growth rate of 5.4 percent. The reason of increasing growth rate is the development at urban fringe or peri urban areas. In this case study it assesses the development at urban fringe and how urban planning efforts are coping with this phenomenon (Zhang, 2010). Data was collected from residents of city center and residents living at peri urban area. Both kind of data empirical and secondary was collected from government department of Kumasi. From this case study it revealed that the housing projects in peri urban areas are causing sprawl and consuming agricultural land. This case study recommends timely and effective measures of planning, how to preserve the agricultural area, spatial integration through regional planning to achieve the long-term solutions of development project on Peri Urban areas and control development(Patrick, 2012).

2.6 Study Area

To know the perception of rural people twelve villages were selected near housing projects. Following table is showing the villages which are selected near MHP.

Table 1 Villages under study area

Sr. no.	Housing projects	Villages
1	DHA phase I, Islamabad	Kotha Kalan
2	DHA phase II, Islamabad	Chak 30 AC, Chak 30 AD
3	Bahria Town phase VIII, Islamabad	Kharakkan, Kanyat, Gurha
4	Mumtaz City	Village Ghurbal, DhokDhumman, Pharma
5	Capital Smart City	Dhok Shahan, DhokBudha, Maira Sharif

Main roads like Siri Nagar Highway and GT road have a clear effect on surrounding area's access but also on nearby commercial markets and business. Same as many main roads are connecting with the study area. Gt road, Main Link Road, Morgah DHA road, Bahria Express, Express highway and Japan road are passing near DHA I. Islamabad expressway, Faisal Avenue, G-T Road, Kahuta Road providing good access to DHA II. Express way, Bahriaexpy, Usman Ghani ave, Umer Avenue are passing near to Bahria Town phase VIII.Rawalpindi JandMianwali Road, M1, Sirinagar Highway, Link Road are providing accessibility to Mumtaz City. Capital Smart City is connected with Chakri road, Chahan road, and Lahore Islamabad motorway.

Below picture is showing the villages around the Housing schemes.

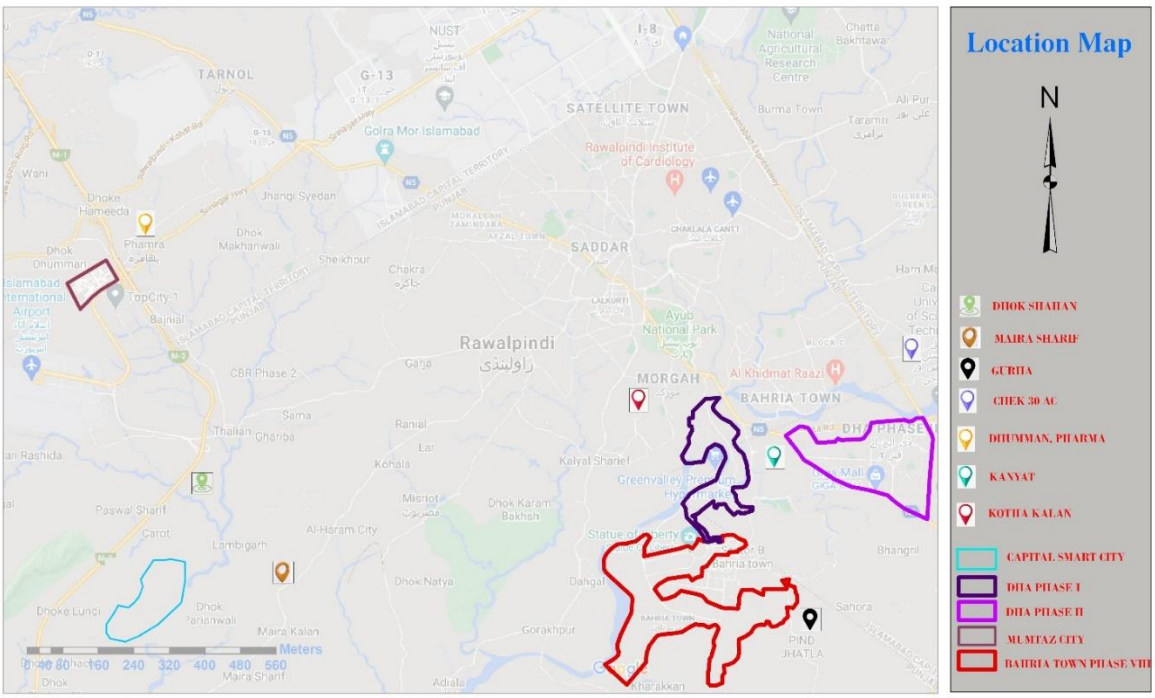


Figure 5 Villages around housing schemes

Table attached in annexure D is showing the impacts indicators of Study area like Roads, schools, Markets, Employment Opportunities, Hospital, Mosque and restaurant in the selected housing projects.

Chapter 3: Methodology

3.1 Introduction

This chapter highlights the methods and techniques that have been adopted during this research on the socio-economic impacts of mega housing projects on the rural areas. It also illustrates the approaches used for data collection, data analysis to attain the desired objectives. It also briefly describes the research design, types of data collection, sample size, different types of data analysis techniques in order to achieve objectives.

3.2 Research design

An appropriate research design is essential for any study. This study focuses on the socio-economic effects of mega housing projects on rural areas. In the context of Pakistan, it is a new topic for research. A hybrid approach is used in this study. It enhances the reliability of research finding using both qualitative and quantitative data collection techniques to give aggregate results related to research questions. This hybrid research design is used for this study because it is descriptive research.

3.3 Data collection

In a research data collection plays a key role and it can be considered as a backbone of the study. As mentioned above it is a mixed method research approach, so both qualitative and quantitative data is required. Quantitative data is collected by the means which are given below

3.3.1 Secondary data

The very first step of this research was to review some well literature related to the topic which helped in understanding of many complexities. Secondary sources that were accessed for the collection of data are given below:

- Journals / published work
- Articles/ research reports departmental reports
- Peri urban plan of area under the study

For understanding the socio-economic impacts of mega housing projects on rural areas research paper, published reports, departmental reports, reviewing the master plan peri-urban plan of study areas were reviewed. Study of literature provided help in understanding different ways through which the objective of research can be achieved

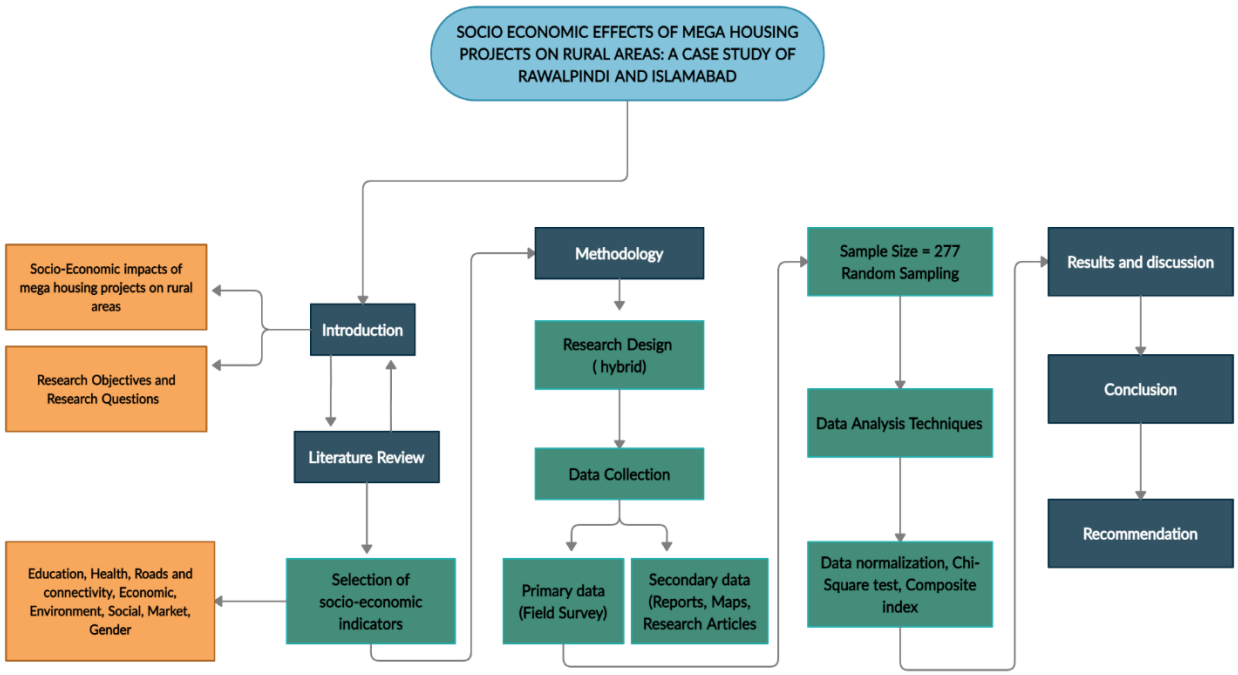


Figure 6 Methodology Flow Chart

3.3.2 Primary data.

Primary data was collected through surveys, questionnaire and structure interviews. The questionnaire survey was conducted in the selected study area to get information about Socio economic impacts of Mega Housing Projects on Rural areas and rural people's perception on growth of Mega Housing Projects on rural areas.

3.4 Interviews

An interview is the source of collecting the primary data that can be shape the whole outcome of the research. For collecting data through interviews different expert and professionals interviewed, for their expert opinion about strategies to regularize and control the growth of unplanned projects in sub urban areas. Two methods of interviews can be one through electronic media and the second is through personal interview session. The professionals that were interviewed are town planners, architects, civil engineer, site engineers and project Mangers of developing sites.

3.5 Questionnaire design

Two questionnaires were prepared one is for Socio economic impacts of Mega Housing Projects on Rural areas and second is for Rural people's perception on growth of Mega Housing Projects on rural areas. Both type of question was added open ended and close ended to collect the data which is required for the topic. Socio economic impacts of Mega Housing Projects on Rural areas.

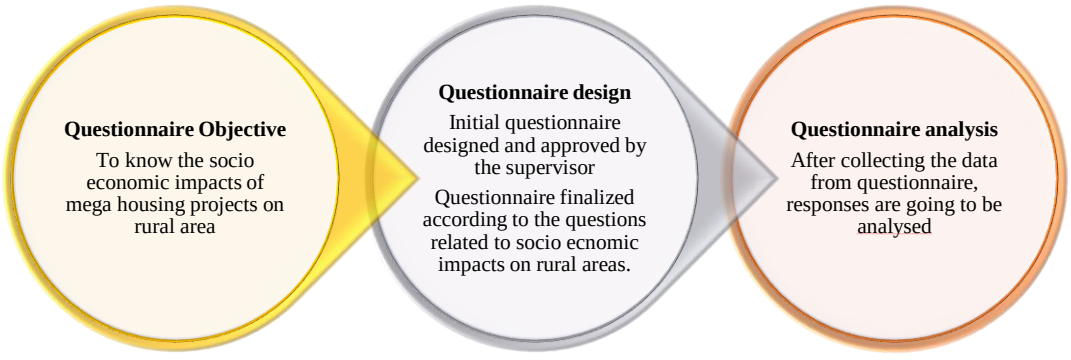


Figure 7 Questionnaire for socio-economic impact

Rural people’s perception on growth of Mega Housing Projects on rural areas

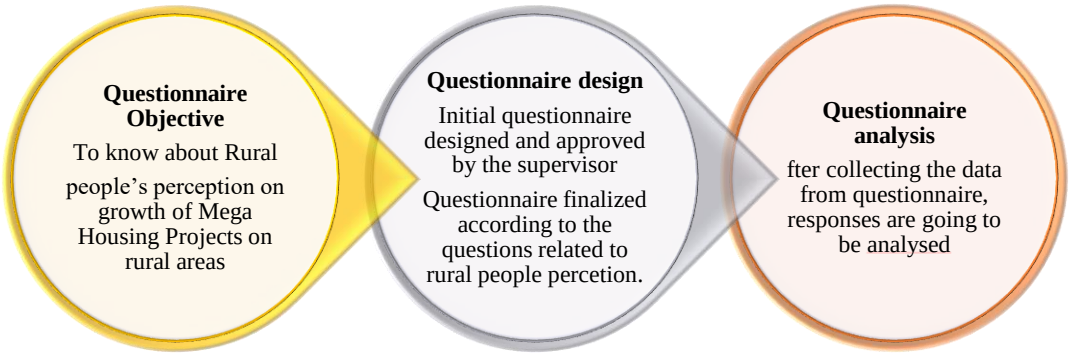


Figure 8 Questionnaire for rural people perception

3.6 Sample size

Main purpose of sample size calculation is to choose the number of people from the target population that are to be include in the study. It enables to study a small number of population so it represents the whole target population. In this study sampling was done to select limited numbers of respondents from the whole population. Before calculating the sample, size there is a small description which is required about the target population and sample.

Population size

Population of study area Rawalpindi as per 2017 census is 2098231

Marginal error

There is a need to decide how much error to allow in your research and the confidence interval determine how much lower or higher than the population mean researcher is willing to let the sample mean fall.

Confidence level

Confidence level determines that how much confidence level researcher wants to be that the actual mean falls with confidence interval. Sample size was estimated by using Slovin's formula as shown below

$$n = \frac{N}{1 + \mathrm{Ne2}}$$

Population =N= 2098231

Marginal error = 0.07

Confidence level = 93%

Sample size = n = 204

3.7 Data analysis techniques

The collected information was analyzed in software called SPSS. Statistical package for social sciences (SPSS) is software which is used by many researchers to analyze the data from highly complex form to the simple form (Arkkelin, 2014).

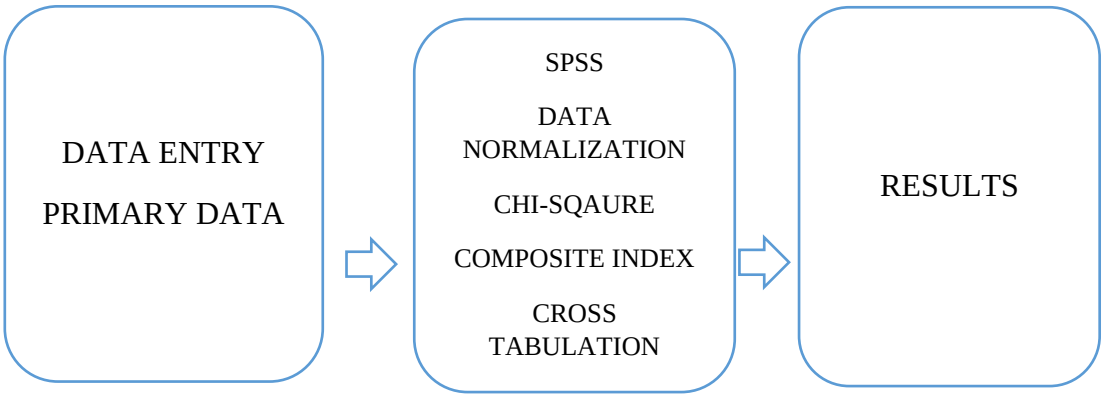


Figure 9 Analysis of Data

3.8 Data analysis

Site selected for the survey was the villages around MHP Sample size is 204, total response was collected are 251.The data collected was analyzed using statistical package for social science (SPSS), Pearson Chi Square test, Composite Index method and Microsoft Excel.

3.9 Ethical requirements

In the data collection process, professional's comments and responses were not shared with any irrelevant individual or authority and they were kept confidential. SOPs of COVID-19 were followed during data collection.

Chapter 4: Results and Discussion

The process of developing these kinds of projects initiated by private investors but now it becomes government interest too (IFC, 2021). These housing projects tend to present a compact multifunctional land use pattern that also include commercial, cultural and entertainment uses and should not only be compatible with development but also with rural sustainability. The increasing demand of separate and luxurious housing is the main reason of the housing projects and also to fulfill the housing backlog. The economy is the major factor and people having own vehicles is encouraging the urban extension towards rural areas as the commuting is no longer problem for them. After literature review and interviewing the experts, town planners and senior professionals, the segregation between Urban, peri urban and rural areas is showing in the below **Figure 10**.

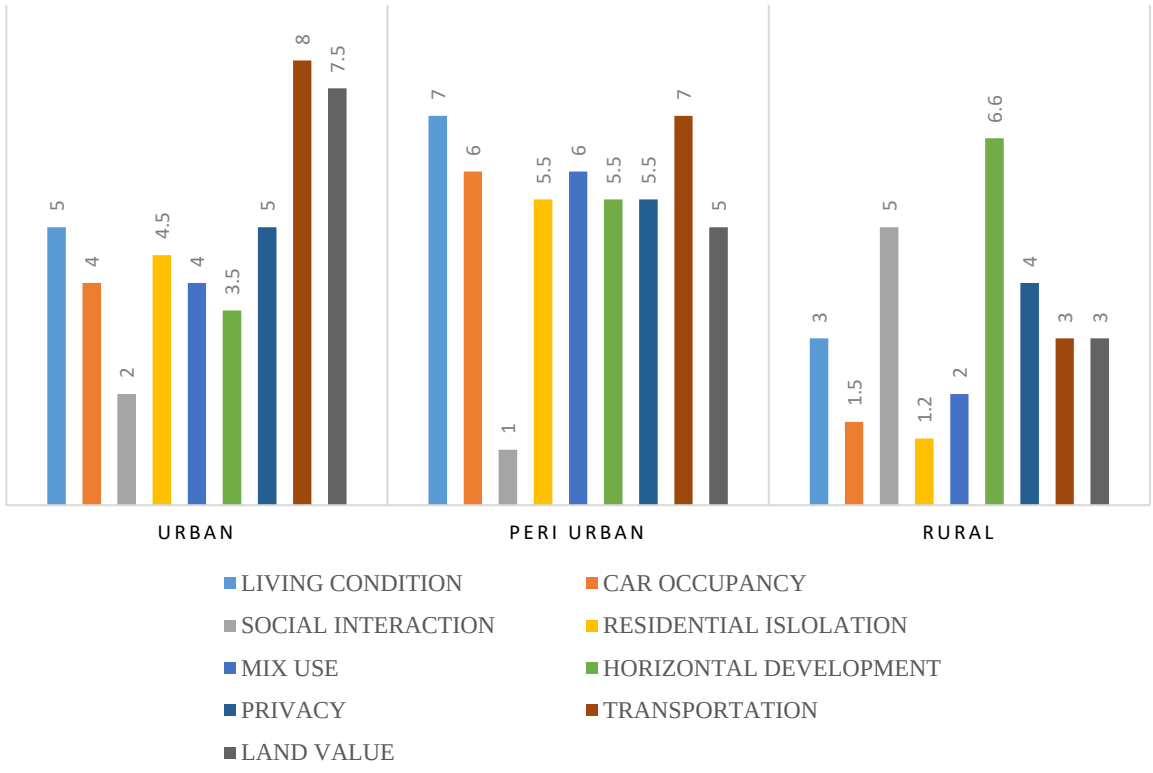


Figure 10 Comparison between urban, peri urban and rural areas

The mega housing projects should also incorporate the affordability and low-income housing (Menon, 2019).To know the socio-economic impacts of Mega Housing Projects on rural areas, a questionnaire-based survey was conducted in which information was collected from villagers of that selected areas. Primary data was collected from questionnaire and collected data was organizes and processed in Statistical package for social science SPSS. Data normalization, Chi square, cross tabulation and composite index techniques were conducted to generate the results. Descriptive Statistics and model outcomes are explained with reference to the findings of conducted study. Results which are obtained through various analysis are presented in the form of tables, graphs and Charts. Results shows that there was difference of perception between different age groups. One thing was observed during survey that there were more villages and Abadies near around under developing Housing projects.

4.1 Respondent Details

Total respondents of the research are two hundred and fifty-one and these respondents played special role in study and its findings. To know the answers of prepared question from respondents' survey was conducted in the study area. It is a very unique way of collecting required information. After analyzing the data results showed that the average age of respondents are 32 years. Percentage of the age group from twenty to thirty years is the highest percentage from others which is 41.8 percent. The quality of a survey varies from age to age. The higher percentage of the respondents belongs to the young people which is the ideal targeted respondents. They are living in the nearby areas of housing scheme they have some future plans and clear perception about the impacts. Minimum numbers of the respondents fall in the class of fifty to seventy years.

Table 2 Respondent Detail

RESPONENT DETAIL				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Age	10-20	11	4.4
		20-30	105	41.8
		30-40	91	36.3
		40-50	35	13.9
		50-70	9	3.6
2	Gender	Male	235	93.6
		Female	16	6.4
3	Education	Matric	135	53.8
		Intermediate	64	25.5
		Graduate	47	18.7
		Post graduate	5	2.0
4	Household size	1-5	61	24.3
		5-10	175	69.7
		10-15	15	6.0

The percentage of this group is only 3.6 percent. Three main reasons of this small number are; firstly, they were not willing to talk, secondly, they referred us to their children and other family members and third reason was they don't have enough knowledge and clear perception. One of the elder respondents from Chak 30 AD said he almost lived his life in the rural area and now he doesn't want to move or give any property for the use of the nearby housing scheme. He was also not willing to utilize the facilities of that housing scheme. According to him existing facilities in his area are enough for him and his family.

Many researchers think that the question "Gender" is not relevant and not required.

Gender can also influence the survey response. In this study's survey 93.6 percent respondents were male and only 6.4 percent respondents were female. There are many reasons of less count of the female respondents like they hesitated to communicate. One of the main reasons was the culture of the rural area didn't allow females to communicate with stranger males or even open the gates of their house. Many ladies didn't open the gates and said come back when their husbands and fathers were at home.

One lady from the village Ghurbal opens the gate answers few questions and she think that surveyor is from income tax or any other department and collecting their information. She immediately stopped answering and said I can't give you these detail without the permission of my husband. Many females were told the purpose of these questions but failed to understand the purpose of the questionnaire.

4.2 Location of respondents

Location of the respondent has a huge impact on the results for example if a respondent is living near the housing project the impacts of that housing project will be different from the respondent who is living far from the same housing scheme.

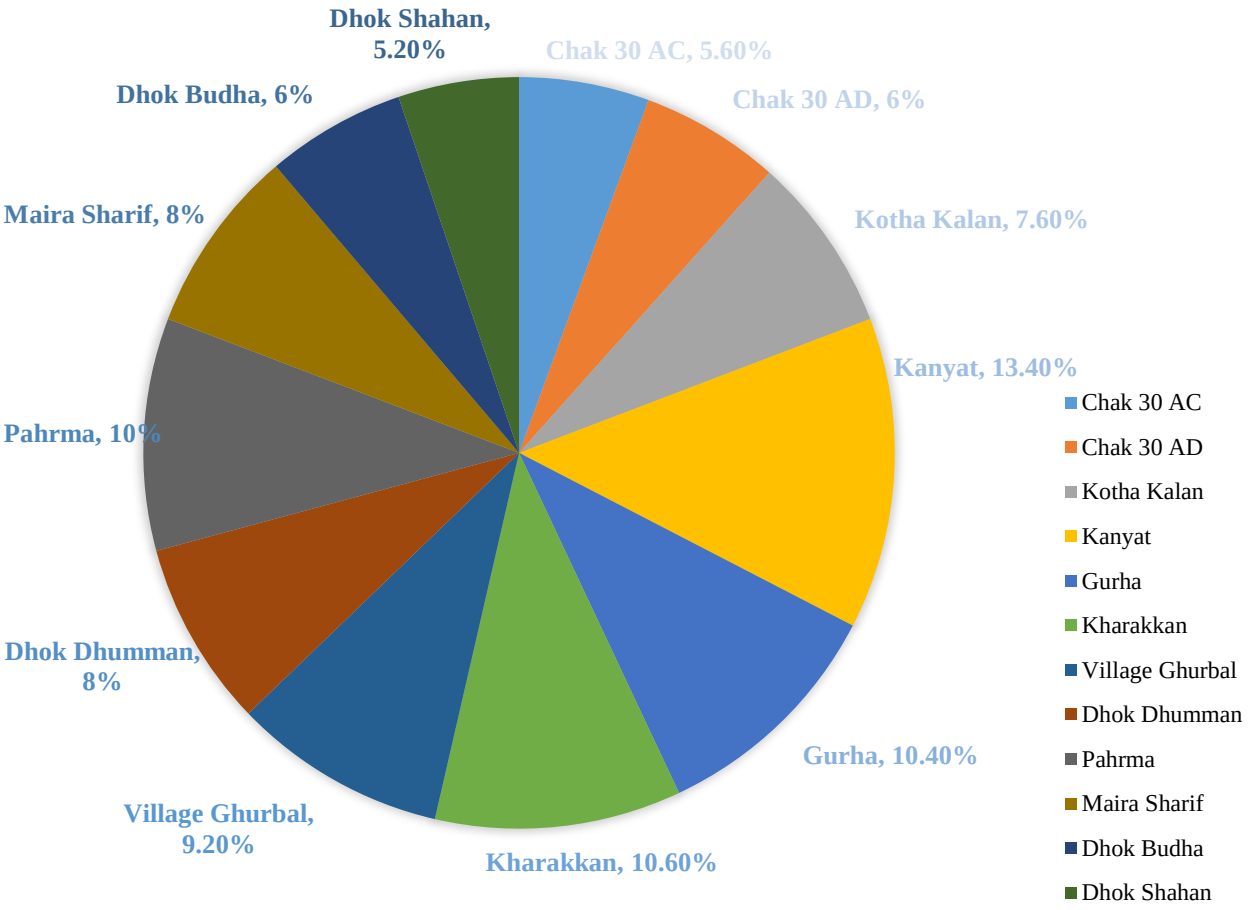


Figure 11 Location of respondents

For the purpose of survey 12 rural areas Chak 30AC, Chak 30AD, Kothakalan, Kanyat, Gurha, Kharakkan, Village ghurbal, Dhokdhumman, Pahrma, Maira Sharif, DhokBudha, Dhok Shahan were selected. Areas were selected on the criteria of distance from housing projects. Maximum respondents from kanya and minimum respondents from Dhok Shahan. Size of the village matters a lot on the numbers of respondent. Maximum numbers of respondents are from Kanyat. The reason of this high ration of respondents is the size of the village Kanyat. Secondly day and time are also affecting the frequency of respondents. Kanyat was visited on Sunday and one thing which was observed that people of Kanyat were more willing to talk and prides us the required information.Some data of these selected locations like village size, population of the village and land price per Marla is collected.

Table 3 Detail of villages

Detail of selected villages				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Village Size	11-20 Acres	55	21.9
		20-35 Acres	63	25.1
		35-50 Acres	20	8.0
		50-60 Acres	80	31.9
		60-90 Acres	14	5.6
		Above 90 Acres	19	7.6
2	Population of village	1000-2000	80	31.9
		2000-3000	80	31.9
		3000-5000	72	28.7
		5000-8000	19	7.6
3	Land price per Marla	1-2.5 Marla	145	57.8
		2.5-3 Marla	43	17.1
		3-4.5 Marla	63	25.2

4.3 Financial Detail of respondents

Monthly income and usage of facilities of the housing schemes are directly proportional to each other. By knowing the income of the respondents, you can know the spending power of the customers. If they have no spending power then the good facilities and utilities are not helpful for them. Average monthly income of respondents is 29597 rupees and in Pakistan minimum range of average salaries is 20700 rupees (Dawani, 2015).

The average monthly income of the respondents that they are earning more than 20700 rupees it means that maximum number of respondents belongs to the middle class.54% respondents earn between 20,000- 40,000. Monthly income also depends on occupation and as we can see the results of occupation only 0.8 respondents own their businesses and mostly were private employees and skilled workers. Only 1.6 respondents earned between 60,000-80,000.

Table 4 Financial Detail of respondents

Financial Detail of respondents				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Numbers of earning members	1	185	73.7
		2	49	19.5
		3	14	5.6
		4	2	.8
		5	1	.4
2	Monthly income	10000-20000	79	31.5
		20000-40000	136	54.2
		40000-60000	32	12.7
		60000-80000	4	1.6

If people have a good earning they prefer to move in some better areas. Because of the gender specific differences 73.7 % respondents were single earning members, 19.5% were two earning members. The percentage of 5 earning members were 0.8.

4.4 Occupation Detail of respondents

In socio economic factors like education, occupation and monthly income, Occupation (means of earning) is very important factor. Occupation is mostly corresponding with education level and income and also it determines someone's social class. Occupation helps to maintain the living Standard and wellbeing of some area is depending on the occupation of its residents.

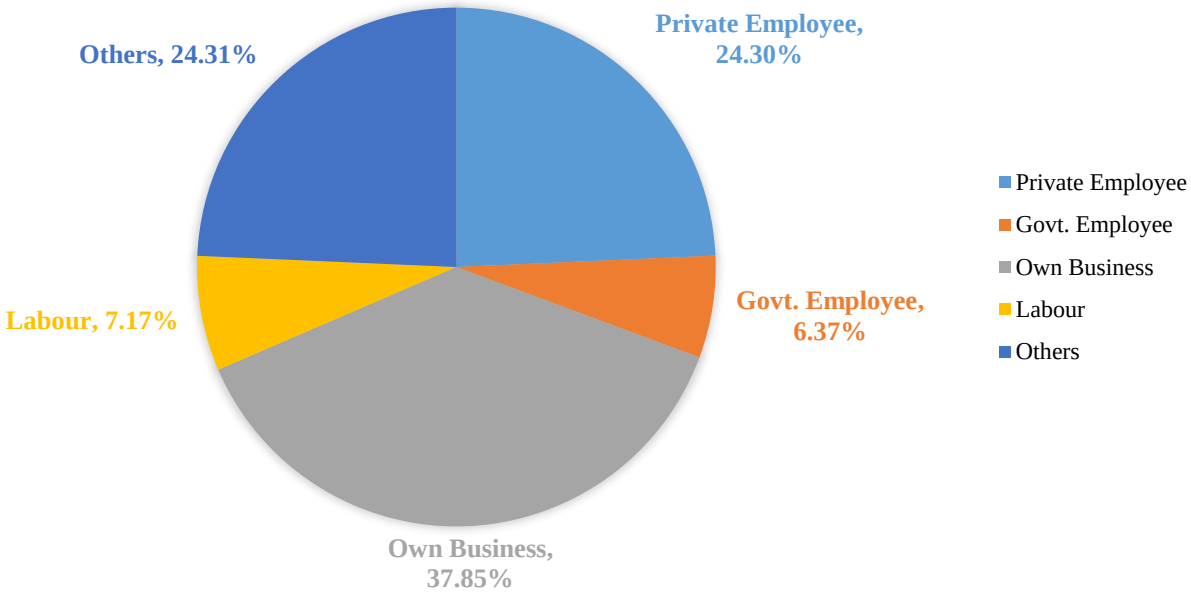


Figure 12 Occupation of respondents

The above **Figure 12** is showing that the minimum numbers of respondents are Government employees and maximum respondents have their own businesses. The reasons of high percentage of own business are high which is 40% is that all small business-like shop keepers, skilled worker, mechanics, farmers and tailors all falling in the category of own business. 7.2 % respondent's occupation is labor and 24.3% residents are private employees. The other category of occupation includes house wives, students, no occupation and unemployed are 23.2%

4.5 Expenditure Detail of respondents

Monthly expenditure is important aspect of the households and also can define the socio-economic condition of the respondents.

Table 5 Expenditure Detail of respondents

Expenditure Detail of respondents				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Educational expenditures in rupees	0-2000	117	46.6
		2000-5000	107	42.6
		5000-10000	22	8.8
		10000-17000	5	2.0
2	Household Expenditures in rupees	5000-8000	183	72.9
		8000-10000	44	17.5
		10000-15000	16	6.4
		15000-20000	8	3.2
3	Health expenditures in rupees	200-1000	154	61.4
		1000-3000	91	36.3
		3000-5000	3	1.2
		5000-9000	3	01.2
4	Transportation expenditures in rupees	500-2000	102	40.6
		2000-5000	112	44.6
		5000-10000	35	13.9
		10000-15000	2	.8

Education expenditures covers all the expenses of school, college, universities, tuition fees and expenditure of all education related services. Major expenses of education are tuition, hostel charges, Books and stationery, personal expenses, transportation cost, School and Extracurricular activities fees. Education expenditure of 46.6% respondents were 0-2000, 42.6% respondents' expense was two to five thousand, 8.8 % respondents' expense was five to ten thousand and only 2% respondents' expense was ten to seventeen thousand. Results showed that the school going kid's percentage was higher than college and university students. Household expenditures includes all expenditures which are necessary to fulfill every day needs like food, cloth, house, house rent and many other miscellaneous services. From the income results it is clear that most of the respondents belongs to middle and lower class but they built their houses on their own land. that's why most of the people have their own houses and fewer were living in the rented houses. And this is the main reason that

72.9% people household expenditure is five to eight thousand, which is minimum expenditure. Health expenditures are specifically those expenditures which are used for health services like routine checkup, seasonal disease, nutrition activities, emergency aid and many more. It was shown in the results that the expenditure if those houses was high where there were infants and elderly people.61.4 % respondent's health expenditure was 200-1000, 36.7 % respondent's health expenditure was 36.7 and only 1.2 % respondent's health expenditure was between five to nine thousand. Lowest expenditure is two hundred to one thousand and highest expenditure is five thousand to nine thousand. Maximum number of respondent's health expenditure is in minimum range. Transportation expenditure includes petrol cost, vehicle maintenance, and public transportation fares. Results shows that the Car occupancy of the respondents were low and bike and public transport usage was high. Because of the lower car occupancy and less commuting distances only and 0.8 % respondent's expenditure was 10,000-15,000 which is the highest range of expenditures.

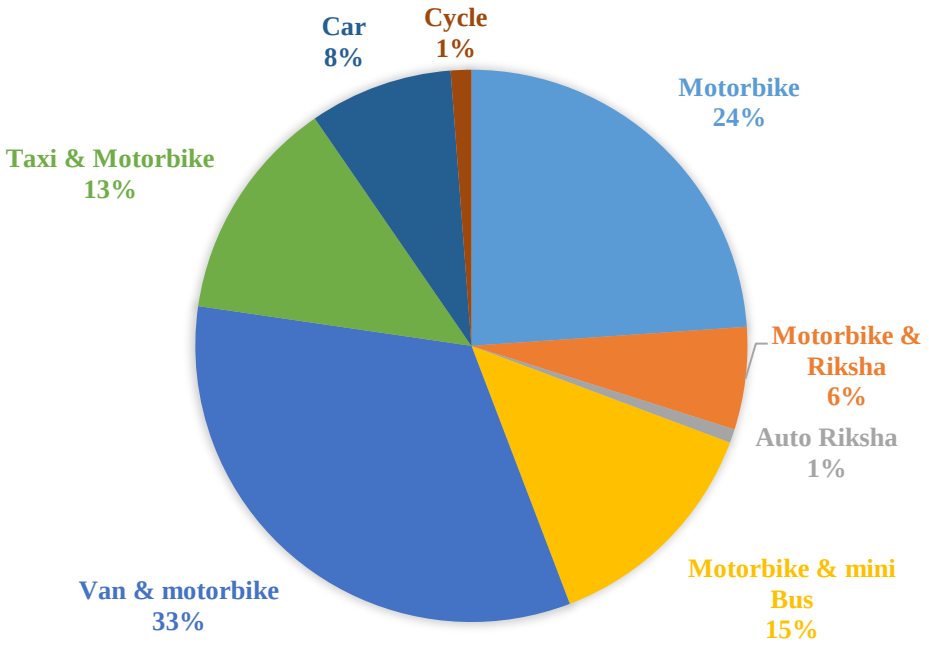


Figure 13 Means of transportation

4.6 Existing condition of water supply and drainage

The pressure of the new housing development has an impact on water supply and drainage.

Table 6 Impacts on water supply and drainage

Existing condition of water supply and drainage				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Main source of Water	Bore Holes	188	74.9
		private connection to pipelines	41	16.3
		public taps	13	5.2
		Hand Pump	9	3.6
2	Time to collect drinking water	0 minutes	240	95.6
		5 minutes	2	0.8
		10 minutes	9	3.6
3	Water Scarcity	Yes	33	13.1
		No	218	86.9
4	Sewerage and drainage issue	Yes	11	4.4
		No	240	95.6
5	Change in Water Quality	Yes	10	4.0
		No	241	96.0
6	Water related issues	No issue	181	72.1
		Scale in Water	20	8.0
		More deep bores	22	8.8
		Low water Table	28	11.2

To know the impacts on water supply and drainage analysis was performed and results showed that 74.9% people's main source of water was bore holes. The reason of this high percentage was the good water table. It is comparatively cheaper than tanks service and it requires no human effort because in boring system centrifugal pumps are used to with a bore in the earth to get direct access to water through a vertical PVC or MS pipe.

16.3% people's main source of water was private connection. In private water connections people store their water in small tanks by using some means of water i.e., Tanker service, water supply by local government through specific piping system installed underground. The reason of private connections was unavailability of water from boring system because

of very low water table in these areas. To get direct access to underground water through boring system is not feasible and uneconomical. Only 3.6% people uses hand pump because of their affordability, absence of any water connection and unavailability of electricity to them. Therefore, these people totally depend on hand pumps. People who preferred filtered water, 0.8 % respondents said that it took five minutes to take drinking water and 3.6% people said that it took ten minutes to collect drinking water from filtration plant. Where, 95.6% people have no issues of drinking water as the quality of tap water is good enough and drinkable that's why they have no need to collect drinking water from outdoor sources. Only 13.1% people faced water scarcity after the development of the nearby housing scheme, according to the respondents the Mega housing Schemes installed tube wells to fulfill the water needs of their society not only for domestic use but also for the ongoing construction and horticulture due to this huge amount of water usage the water table is becoming low. 86.9% people have no issue like water scarcity. Between this 86.9 % people almost 36.8% respondents said that housing project did not affect the water supply because they were facing the same water scarcity before the development of housing scheme.

At the initial stage of development of mega housing, no sewerage and drainage issues found or faced in the nearby residential areas, however, 4.4% people said that as per their previous experience with the passage of time such mega housing projects affect the main sewerage and drainage system by the overloading the main system specifically in rainy seasons. People having private connections were mostly facing water related issues like scale in water, fungus and rust due to old/obsolete piping system. Water odor problem are 8.0% due to the over dozing of Chlorine and old rusty pipes. 20% people who were using bore holes are facing low water table and deepening of bores and remaining 67.6% people have no water related issues.

4.7 Existing condition of Utilities

Mega housing projects have mega requirements of utilities and to fulfill these requirements these projects built their own utilities as well as from the surrounding areas. To know the impacts on utilities of the rural area the survey was performed and analysis results from the collected data are shown in the following **Table 7**. The results show that there are some impacts on utilities but not on a huge scale. mostly people 94.8% respondents use electricity because of its availability in their area established by the local government as well as it needs less initial cost and affordable to the middle and lower class. The usage cost of electricity charged to the consumers after one complete month, which is convenient to pay for salaried individuals and daily wagers.4.8% people's source of lighting were solar system and the reason was the affordability of the residents, although the initial cost of installation of solar system is high but its operational cost is much economical. The solar system was installed in residential facilities as well as on agricultural facilities. Only 0.4 % people use Gas Lanterns, these respondents was living in slums and nearby housing schemes. Only2.4% respondents have electricity issues and 0.4%, 2% and 4.4 people faced problems like voltage issues, load shedding and increase in bills issues respectively. Availability of natural gas is 55% and usage of biogas, firewood and saw dust is 5.6, 37.5 and 2.0 percent respectively.

Table 7 Impacts on utilities

Existing condition of utilities				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Source of lighting	Electricity	238	94.8
		Solar System	12	4.8
		Gas lantern	1	0.4
2	Any electricity issue	Yes	6	2.4
		No	245	97.6
3	Voltage issue	Yes	1	0.4
		No	250	99.6
4	Load Shedding	Yes	5	2.0
		No	246	98.0
5	Increase in electricity bills	Yes	11	4.4
		No	240	95.6
6	Fuel for cooking	Gas	138	55.0
		Biogas	14	5.6
		Firewood	94	37.5
		Saw dust	5	2.0

4.8 Existing condition of agriculture

Development of mega housing project causing the loss of best agricultural land, farmland, forest, open spaces, trees and the habitat is the most important issue of these mega housing projects from a land use perspective. To know the impact on agriculture analysis was performed and results are following in the **Table 8.**

Table 8 Impacts on agriculture

Existing condition of agriculture				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Own agricultural land	Yes	28	11.2
		No	223	88.8
2	Growing crops	Yes	28	11.2
		No	223	88.8
3	Own Non-agricultural land	Yes	21	8.4
		No	230	91.6
4	Loss of agricultural area	Little	11	4.4
		Have no Area	225	89.5
		10-15 Marla	3	1.2
		2-10 kanal	11	4.4
		More than 10 kanal	1	0.4

These mega housing projects takes places where farming and agriculture spaces have no future and farmers are frequently giving up agriculture activities to nonagricultural activities. This is the reason why people have less agricultural land. Only 11.2% have agricultural land and same percentage is growing crops.

4.9 Existing condition of mobility

Mega housing projects are carried out with the aim of providing adequate housing facilities. Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway. The geographic location of the mega housing projects is influencing nearby rural areas' mobility directly and indirectly. The impacts on mobility are as following.

Table 9 Impacts on mobility

Existing condition of mobility				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Affordability of public transport	Yes	242	96.8
		No	9	3.6
2	Means of transportation	Motorbike	60	23.9
		Motorbike & Ricksha	15	6.0
		Auto Ricksha	2	0.8
		Motorbike & mini-Bus	34	13.5
		Van & motorbike	83	33.1
		Taxi & Motorbike	33	13.1
		Car	21	8.4
		Cycle	3	1.2
3	Condition of Roads	Good	21	8.4
		Normal	223	88.8
		Poor	7	2.8
4	Main Roads near Village	Yes	218	86.9
		No	33	13.1
5	Time to Access main road	10-15 minutes	51	20.3
		15-20 minutes	115	45.8
		20-25 Minutes	68	27.1
		more than 25 minutes	17	6.8
6	Accessibility of main road	Yes	243	96.8
		No	8	3.2
7	Availability of public transport	Yes	231	92.0
		No	20	8.0

Respondent's means transportation is mostly public only 23.9% people uses motorbike, 8.4% using cars and 1.2% have cycles. 96.8% respondents said that the public transportation is affordable for them and 92% people have availability of public transport.

4.10 Existing condition of economy

Along with social impacts these mega projects have economic impacts also and results of the economic impacts are as following:

Table 10 Impacts on Economy

Existing condition of economy				
Sr. No	**Variables**	**Categories**	**Numbers**	**Percent**
1	Given land to the projects	Yes	22	8.8
		No	229	91.2
2	Effect on Land price	Yes	178	70.9
		No	73	29.1
3	Want to emerge land or any property with housing scheme	Yes	185	73.7
		No	66	26.3
4	Reasons of emergence	Land price will increase	182	72.5
		Become the part of city	2	0.8
		Affiliation	3	1.2
		Graves of ancestors	1	0.4
		Investors didn't give good price	47	18.7
		Have no land	16	6.4
5	Noise pollution	Yes	7	2.8
		No	244	97.2
6	Want to move in housing society	Yes	106	42.2
		No	145	57.8
7	Reason of moving to housing society	Luxurious Life Style	10	4.0
		Clean Environment	22	8.8
		Good Life Style	35	13.9
		Availability of facilities	39	15.5
		Nil	145	57.8
8	Charges to utilize facilities of nearby housing scheme	Yes	96	38.2
		No	139	55.4
		Don't know	16	6.4
9	Project beneficial or not	Yes	106	42.2
		No	145	57.8

As these projects are near rural areas or green areas it is obvious that some of these areas will be lost and after the rising of land prices people are willing to give their land on a high price to these projects. According to the analysis 8.8% people give land to the nearby housing project.70.9% people said that these projects effect their land price, 73.7 % respondents want to emerge land or any property with housing scheme. 72.5% respondents give reason of emergence with the housing scheme that there land price will be increased but only 42.2 % wants to move in the nearby housing society.

4.11 Socio-economic indicators analysis

To know the impacts of mega housing projects on rural areas an indicator-based approach has been used. Few indicators were selected after interviewing the experts and from literature review (Arbour, 2017) impacts data was collected from the selected area by using Likert scale which is one-dimensional scale used to collect respondent's opinion. When respondents were responding about the impacts on Likert scale, they were showing their level of using facilities of housing schemes from very high to very low.

In this study the Likert scale is indicating

- 1=very high
- 2=high
- 3=Neutral
- 4=Low
- 5=Very Low

Indicator used for the study are

- Education
- Health
- Market
- Roads and connectivity
- Social impacts
- Environmental impacts
- Economic impacts
- Impacts on Gender

4.12 Chi- Square test

A renaissance scientist Karl Pearson invented the of hypothesis testing. This test is used for two main purposes. One is to check the hypothesis between two or more groups with no association and second is to observe distribution of data set fit with distribution that is expected. (Singhal, 2015) This test is used to analyze categorical data. Formula of calculating Chi-square is following.

$$X^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

Out of 251 respondents, 135 were from around developed housing scheme and 116 were from the surrounding areas of under developing housing scheme. The development status-based analysis was performed by applying Pearson's chi-square test on each indicator showing in the following table. To know the impacts of mega housing projects on rural areas an indicator-based approach has been used. Few indicators were selected after interviewing the experts and from literature review impacts data was collected from the selected area by using Likert scale which is one-dimensional scale used to collect respondent's opinion. When respondents were responding about the impacts on Likert scale, they were showing their level of using facilities of housing schemes from very high to very low. In this study the Likert scale is indicating 1=very high, 2=high, 3=Neutral, 4=Low and 5=Very Low.

Out of 251 respondents, 135 were from around developed housing scheme and 116 were from the surrounding areas of under developing housing scheme. The development status-based analysis was performed by applying Pearson's chi-square test on each indicator showing in the following table.

4.12.1 Education

People of rural areas have different perception regarding the educational facility of nearby housing scheme. Below figure is showing the numbers of each indicator on Likert scale.

ED-01 Utilization of the educational facilities combined result of both developed and under developing housing societies shows that the use of educational institutes is mostly neutral on Likert scale. ED-02 Time to travel to avail the educational facility is high. It means respondents have to travel more to avail the educational facilities. Rest of indicators educational facilities helpful for village, increase in educational facilities, uplift the education level, Availability of technical institute, Affordability of housing scheme's schools, Transportation provision, Village's teacher provides home tuitions in nearby housing schemes, home tutors from housing schemes to village, increase in confidence level of child have a neutral response on Likert scale.

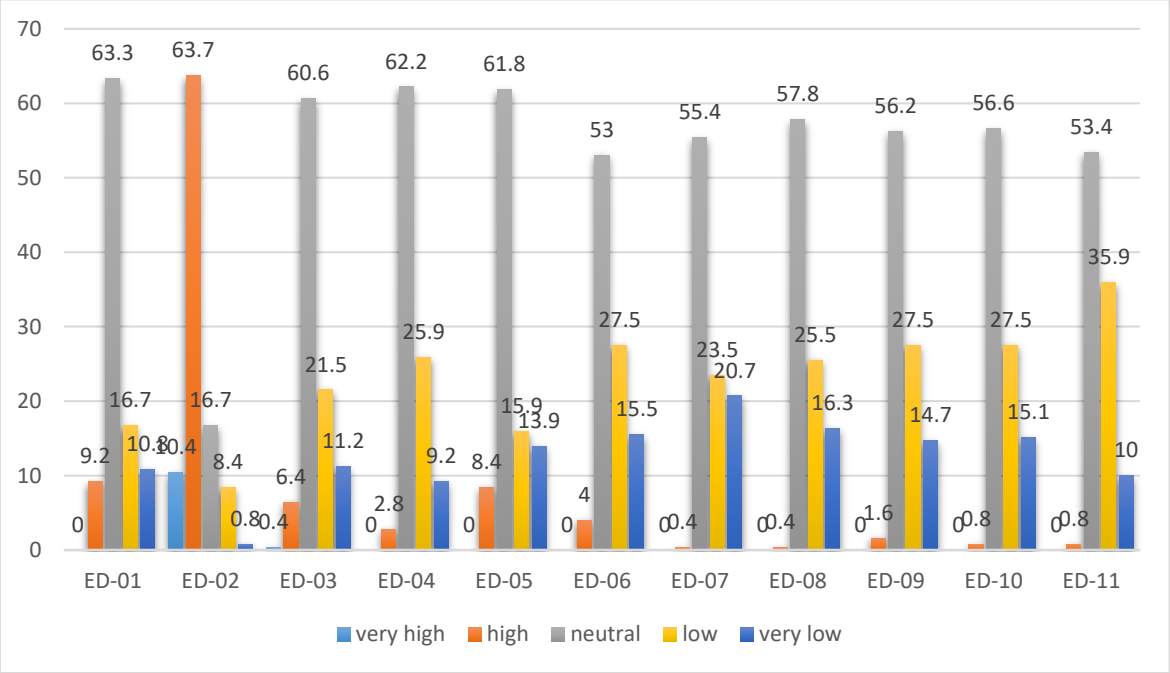


Figure 14 Educational impacts

After segregation of housing a scheme developed and under developing Chi Square test was performed and results of analysis are given below in the **Table 11.**

Table 11 Chi- Square test education

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
ED-01	Utilization of the educational facilities	3.59	2.93	51.65	.000
ED-02	Time to travel to avail the educational facility	3.45	2.96	54.68	.000
ED-03	Educational facilities helpful for village	3.60	3.09	45.08	.000
ED-04	Increase in educational facilities	3.67	3.11	60.10	.000
ED-05	uplift the education level	3.65	3.00	64.33	.000
ED-06	Availability of technical institute	3.98	3.03	121.66	.000
ED-07	Affordability of housing scheme's schools	4.11	3.10	107.19	.000
ED-08	Transportation provision	4.00	3.09	100.52	.000
ED-09	Village's teacher provides home tuitions in nearby housing schemes	3.94	3.09	105.94	.000
ED-10	Home tutors from housing schemes to village	3.97	3.07	103.73	.000
ED-11	Increase in confidence level of child	3.87	3.17	78.89	.000

The only factor in education category having significant difference in development-based perception of rural resident for availability of technical institute (X2 = 121.66, p-value 0.000). With higher difference between develop and under developed. Remaining results of Utilization of the educational facilities, Time to travel to avail the educational facility, educational facilities helpful for village, increase in educational facilities, uplift the education level, Affordability of housing scheme's schools, Transportation provision, Village's teacher provides home tuitions in nearby housing schemes, home tutors from housing schemes to village and increase in confidence

level of child shows that all indicators have significant difference between developed and under developed areas.

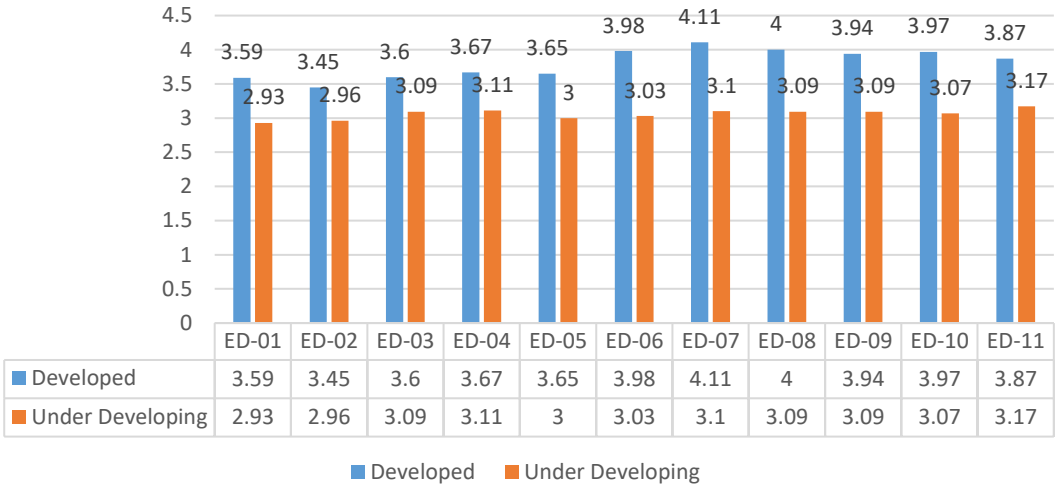


Figure 15 Mean Value of Education

4.12.2 Health

Health indicator is very important variable to direct measure the community's health and also the reflection of the health facilities. These indicators are used to measure health of community, to compare the health between different communities, to identify the health needs and prioritizing them, evaluation of health services, planning and allocation of health resources and measure of health success. Below figure shows that the health indicators from H-01 to H-11 Utilization of health facilities, Level of benefits by these housing facilities, Time to travel to avail facilities, Affordability of health facilities, Satisfaction level, Growth of health facilities in village, Preference of housing scheme health facility over village health facility, Private clinic in village, in emergency use of housing scheme's health facilities, Avail the ambulance service, Level of help from ambulance service are mostly neutral and Low on Likert Scale.

Table 12 Chi Square test Health

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
H-01	Utilization of health facilities	3.92	3.12	76.04	.000
H-02	Level of benefits by these housing facilities	3.54	2.94	47.15	.000
H-03	Time to travel to avail facilities	3.48	3.08	24.95	.000
H-04	Affordability of health facilities	3.94	3.17	100.52	.000
H-05	Satisfaction level	2.98	3.00	5.01	.167
H-06	Growth of health facilities in village	3.94	3.17	117.87	.000
H-07	Preference of housing scheme health facility over village health facility	3.37	3.06	18.05	.000
H-08	Private clinic in village	3.96	3.03	140.48	.000
H-09	In emergency use of housing scheme's health facilities	3.29	3.00	37.28	.000
H-10	Avail the ambulance service	4.06	3.01	224.44	.000
H-11	Level of help from ambulance service	4.04	3.00	152.58	.000

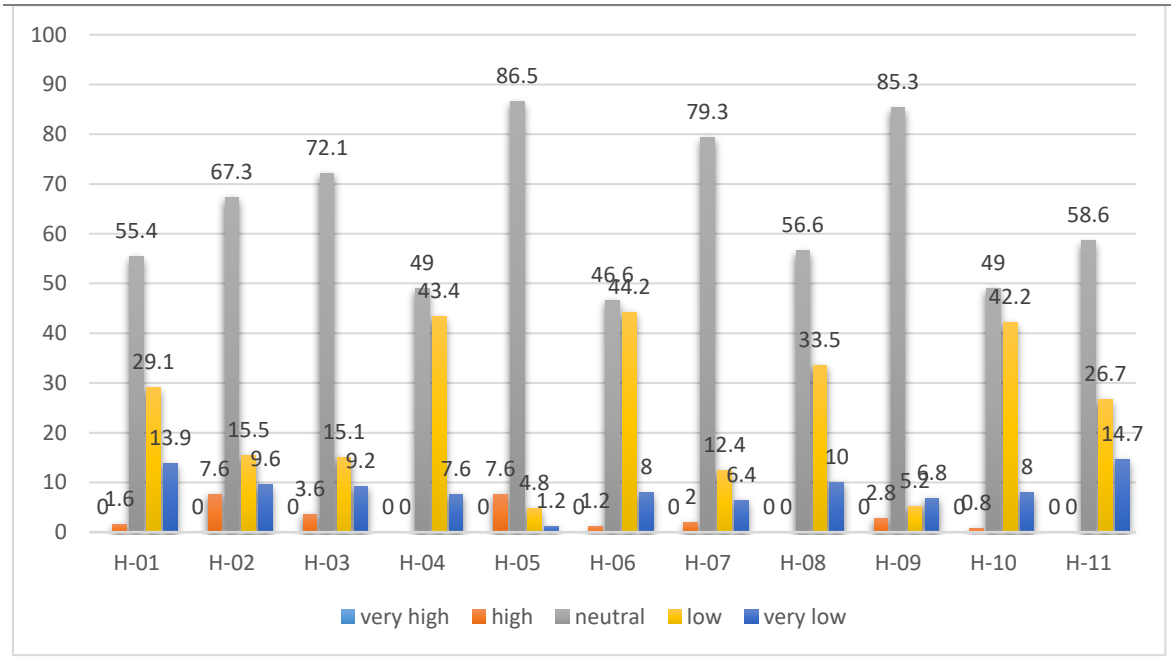
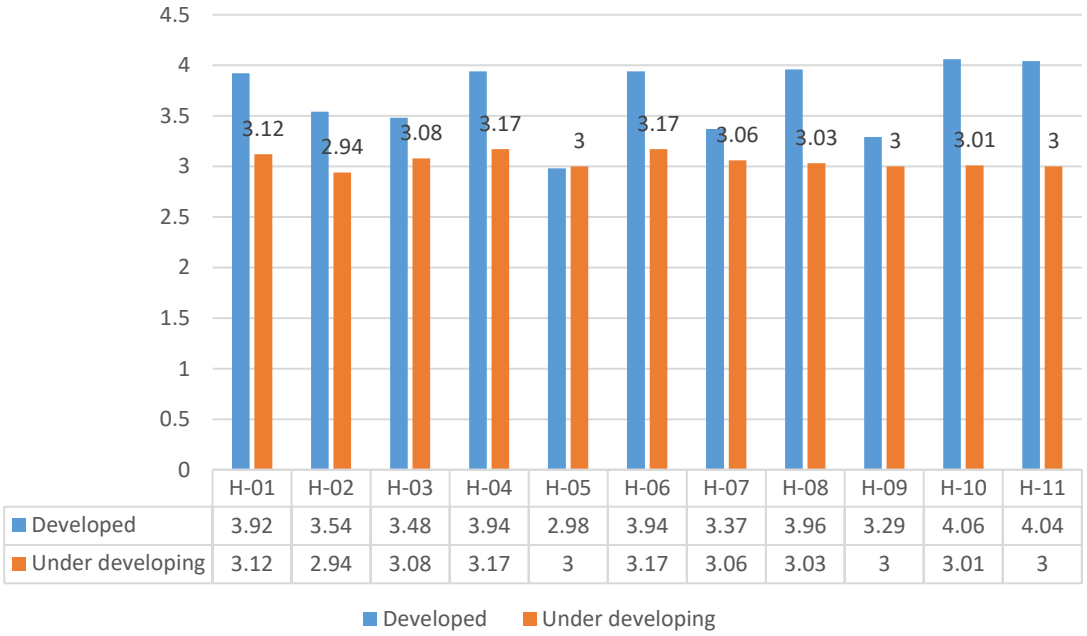


Figure 16 Health Impact

After segregation of housing schemes developed and under developing Chi Square test was performed to know the impact of health indicator and results of analysis are given below in the table. The significant factor highlighted in the results is avail of ambulance service and satisfaction level of health facilities. There is a significant difference between developed and under developing regarding the availing of ambulance service of the nearby housing scheme (x^2 = 222.44, p-value 0.000), whereas the satisfaction level between developed and under developing is same (x^2 = 5.01, p-value 0.167) it shows that there is no significant difference.



	H-01	H-02	H-03	H-04	H-05	H-06	H-07	H-08	H-09	H-10	H-11
Developed	3.92	3.54	3.48	3.94	2.98	3.94	3.37	3.96	3.29	4.06	4.04
Under developing	3.12	2.94	3.08	3.17	3	3.17	3.06	3.03	3	3.01	3

Figure 17 Mean Value of Health

4.12.3 Market

Market indicators are quantitative in nature and also used to attempt forecast market moves, Demand and Supply. These indicators are subset of technical indicators and aid to investor's investment and business decision. Below figure is showing the response of rural residents on Likert scale. M-01 to M-09 codes are the codes of Utilization of market facilities, Time to travel to avail the market facility, Level of benefits by these housing facilities, Affordability

of markets, increase in food supply from village, Demand of Raw material, purchase raw material from housing scheme, Increase in business and Price difference.

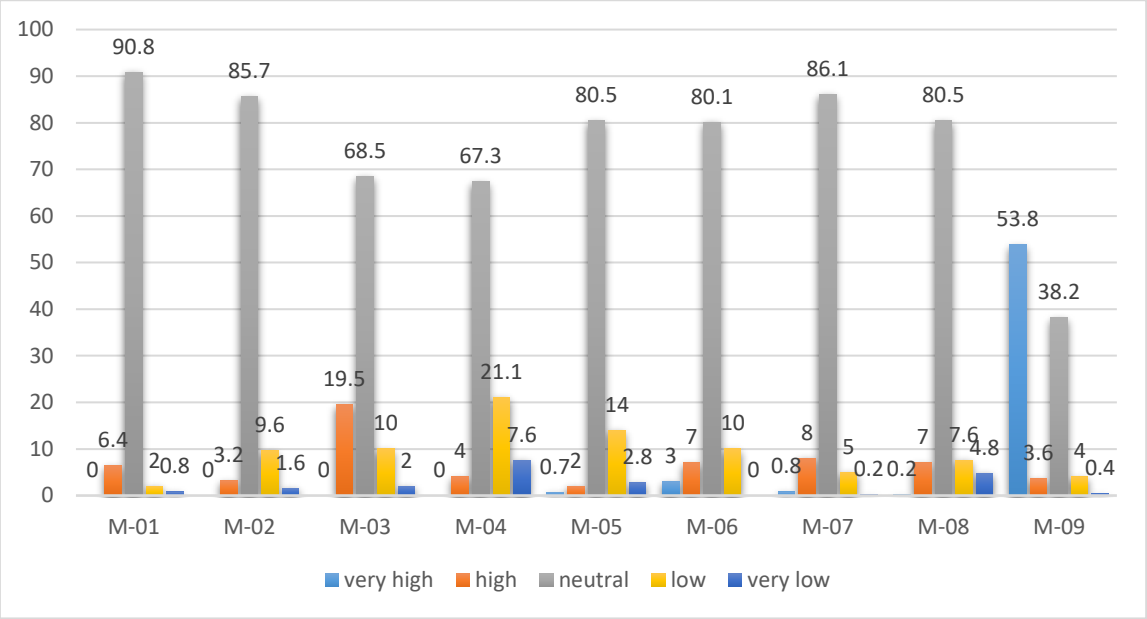


Figure 18 Market impacts

To know the impact of market indicator chi square test is performed on developed and under developing housing schemes. Below table is showing the results of each sub indicators. Significant factor in market indicator with a huge significant difference between developed and under developing is level of benefits by these market facilities (X2 = 63.22, p-value 0.000). However, the factors increase in food supply from village and demand of raw material have no significant difference among developed and under developing. Increase in food supply from village (X2 = 6.53, p-value 0.088) and demand of raw material (X2 = 5.23, p-value 0.073). Remaining factors Utilization of market facility, time to travel to avail market facilities, Market affordability, purchase of raw material from nearby housing scheme, increase in business and price difference have also significant difference among both categories.

Table 12 Chi-square test on Market

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
M-01	Utilization of market facilities	2.94	3.01	9.88	0.020
M-02	Time to travel to avail the market facility	3.18	2.99	25.43	.000
M-03	Level of benefits by these housing facilities	2.82	3.08	63.22	.000
M-04	Affordability of markets	3.53	3.07	47.66	.000
M-05	Increase in food supply from village	3.23	3.12	6.53	0.088
M-06	Demand of Raw material	2.94	3.06	5.23	0.073
M-07	Purchase raw material from housing scheme	2.89	2.61	13.46	0.001
M-08	Increase in business	3.52	2.91	25.14	.000
M-09	Price difference	1.01	3.00	251.00	.000

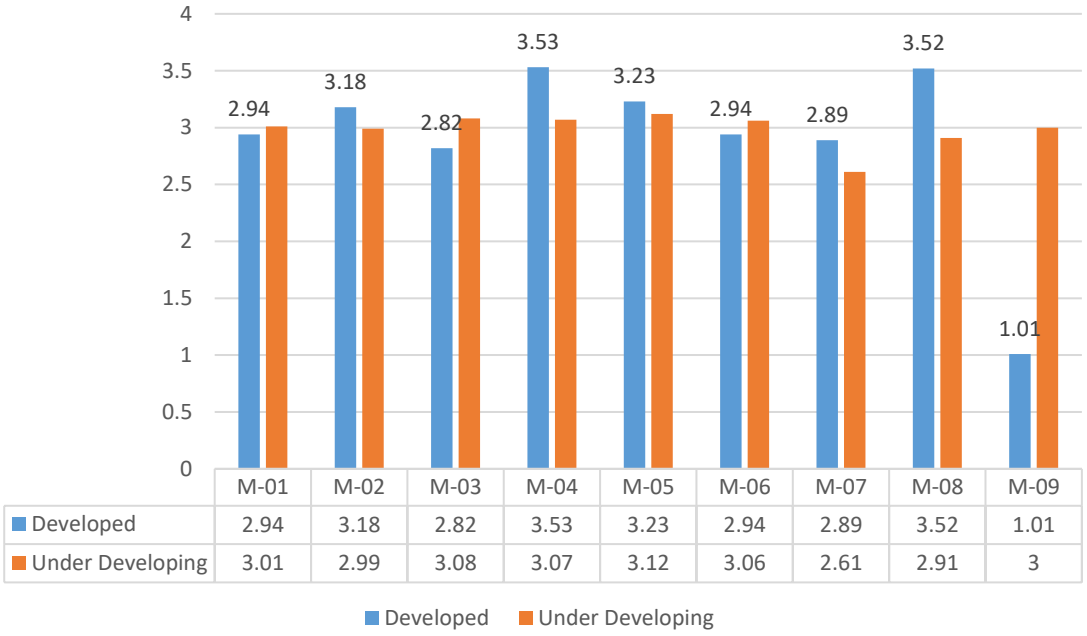


Figure 19 Mean Value of Market indicator

4.12.4 Roads and connectivity

Roads had varying impacts on their surrounding areas. Some of these communities clearly encourage economic growth. R&C-01 to R&C-10 are the codes of Main roads improve the connectivity, Reduction in commuting cost, Time to access the main road, condition of village's road, Trips per day in HS, Business trips per day in HS, Social trips per day in HS, Leading roads from village to HS, Any Bus or transport from village to HS and Improvement in village's road infrastructure. Impact of roads and connectivity on developed and under developing housing project is given in the below table.

Table 13 Chi-square test on roads and connectivity

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
R&C -01	Main roads improve the connectivity	2.30	2.95	92.83	.000
R&C -02	Reduction in commuting cost	3.24	3.19	2.58	0.460
R&C -03	Time to access the main road	3.02	3.07	3.66	0.160
R&C -04	condition of village's road	3.00	3.07	10.16	0.006
R&C -05	Trips per day in HS	4.05	4.11	4.12	0.127
R&C -06	Business trips per day in HS	3.37	3.20	15.56	.000
R&C -07	Social trips per day in HS	4.19	3.21	133.00	.000
R&C -08	Leading roads from village to HS	2.17	3.00	140.12	.000
R&C -09	Any Bus or transport from village to HS	4.22	3.92	19.47	.000
R&C -10	Improvement in village's road infrastructure	3.27	3.17	5.16	0.160

But some roads also have mix impacts both negative and positive. In this study it was observed that many major roads from Housing Schemes to villages also have access to the regional markets and also generates development pressure. Results show that the higher significant difference is between leading roads from villages to housing schemes between developed and under developing (x^2 = 140.12, p-value 0.000). Remaining factors reduction

in commuting cost (x^2 = 2.58, p-value 0.460), time to access the main road (x^2 = 3.66, p-value 0.160), trips per day in HS (x^2 = 4.12, p-value 0.127) and improvement in village's road infrastructure (x^2 = 5.16, p-value 0.160) have no significant difference between developed ad under developing, these have the same impacts.

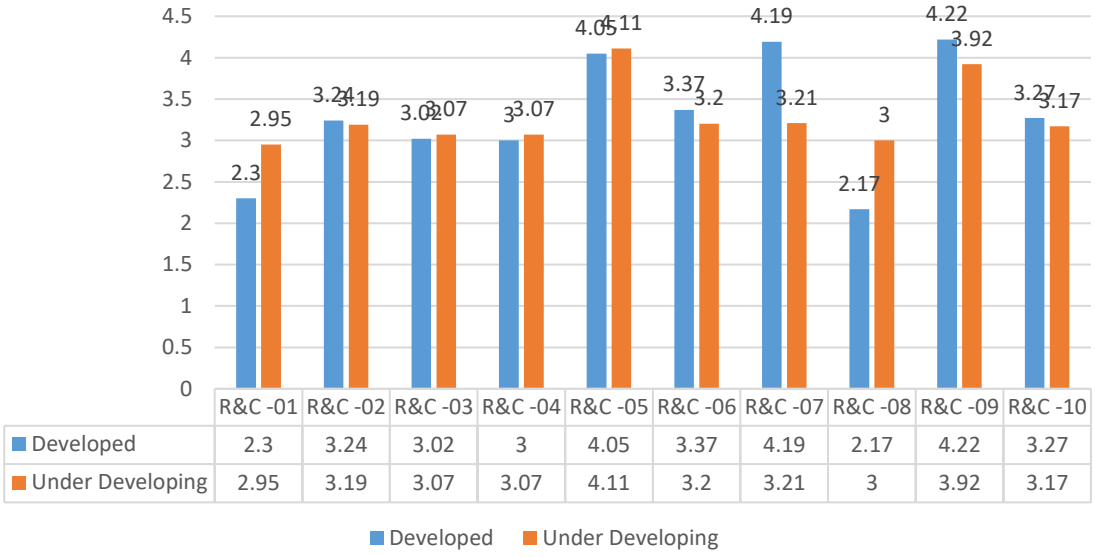


Figure 20 Mean Value of Roads and connectivity indicator

4.12.5 Social

Social indicators are used to evaluate the social objectives of some community or organization (Rogers, 2009).

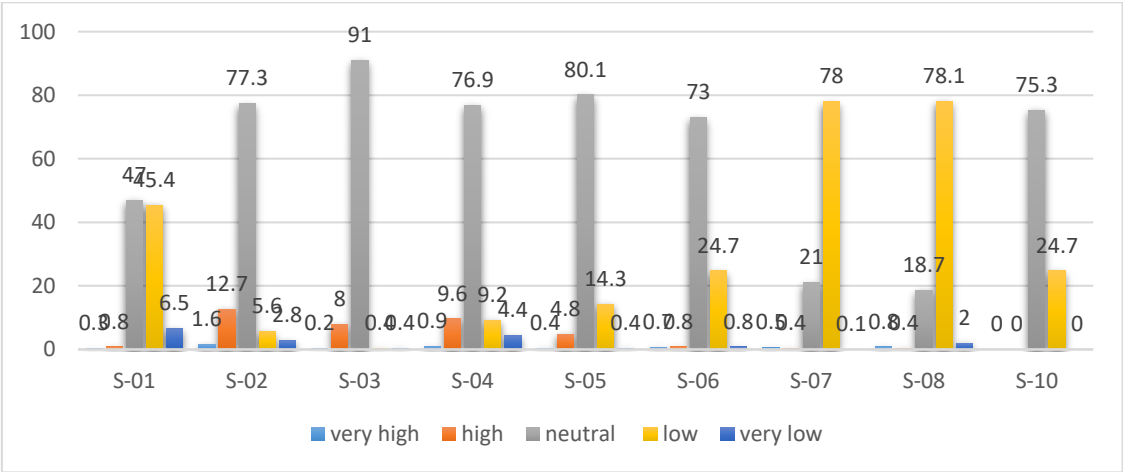


Figure 21 Social impacts

Codes of social indicators from S-01 to S-10Social interaction, Segregation of residential area, Level of satisfaction being near to HS, Level of satisfaction of living environment, Disturbance in village's privacy, Labors start to living in village, Slum settlements after the development of HS, Safety issue to village, Crime rate and Improvement in life style are the sub indicator of social. Following figure is showing the values of each sub indicator on Likert scale from very high to very low. Social Impact of developed and under developing is shown in the below table and results are derived from the chi square test.

Table 14 Chi-square test on social indicator

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
S-01	Social interaction	4.09	3.00	235.44	.000
S-02	Segregation of residential area	2.91	3.01	63.36	.000
S-03	Level of satisfaction being near to HS	2.85	3.00	20.72	.000
S-04	Level of satisfaction of living environment	3.20	2.94	12.41	0.006
S-05	Disturbance in village's privacy	3.21	3.01	14.26	0.003
S-06	Labors start to living in village	3.08	3.10	7.72	0.102
S-07	Slum settlements after the development of HS	3.29	3.20	5.76	0.124
S-08	Safety issue to village	3.82	3.72	6.14	0.046
S-09	Crime rate	3.80	3.87	12.96	0.005
S-10	Improvement in life style	3.20	3.29	2.46	0.117

The only factor of social category having significant difference is social interaction between housing schemes and rural areas is (x^2 = 235.44, p-value 0.000). but three indicators labor starts to living in the village (x^2 = 7.72, p-value 0.102), slums settlements after the development of housing scheme (x^2 = 5.72, p-value 0.124) and improvement in life style (x^2 = 2.46, p-value 0.117) have no significant difference. These impacts are same on both categories.

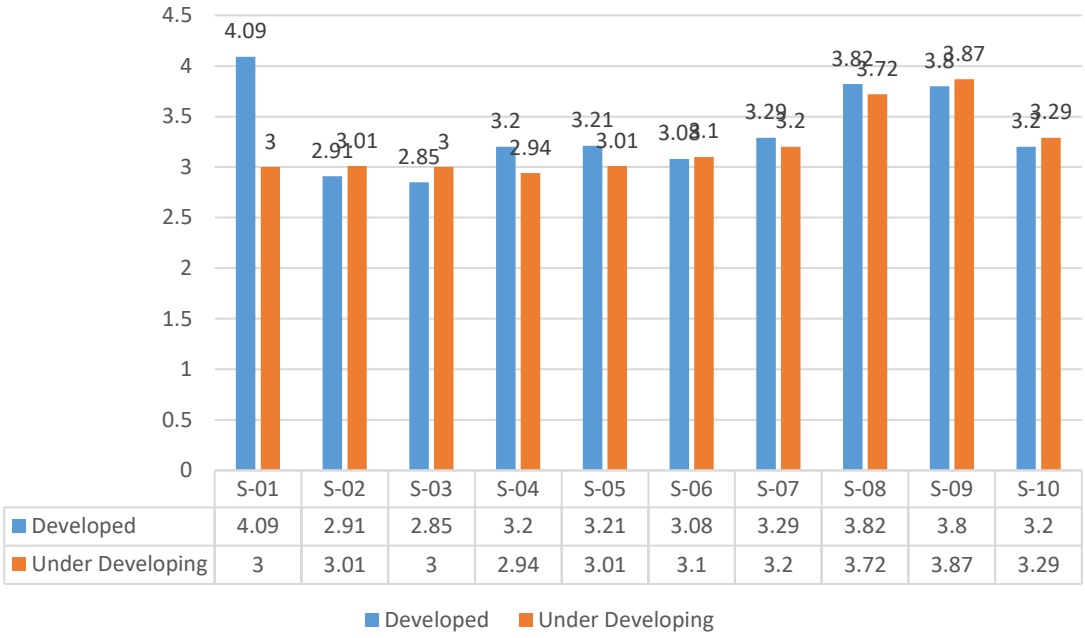


Figure 22 Mean Value of Social Indicator

4.12.6 Economy

Economic impacts are often used to examine the economic condition before and after some development or to examine the consequences of economic development projects and efforts like business opening and closure, site selection projects and real estate developments (Quench, 2013). EC-01 to EC-08 are the codes of HS provides employment opportunities, increase in household expenditure, Provision of labor from village to HS, increase in land price, increase in investment opportunities, increase in local employment, increase in village's productivity and increase in business opportunities are given in below figure from very high impact to very low impact.

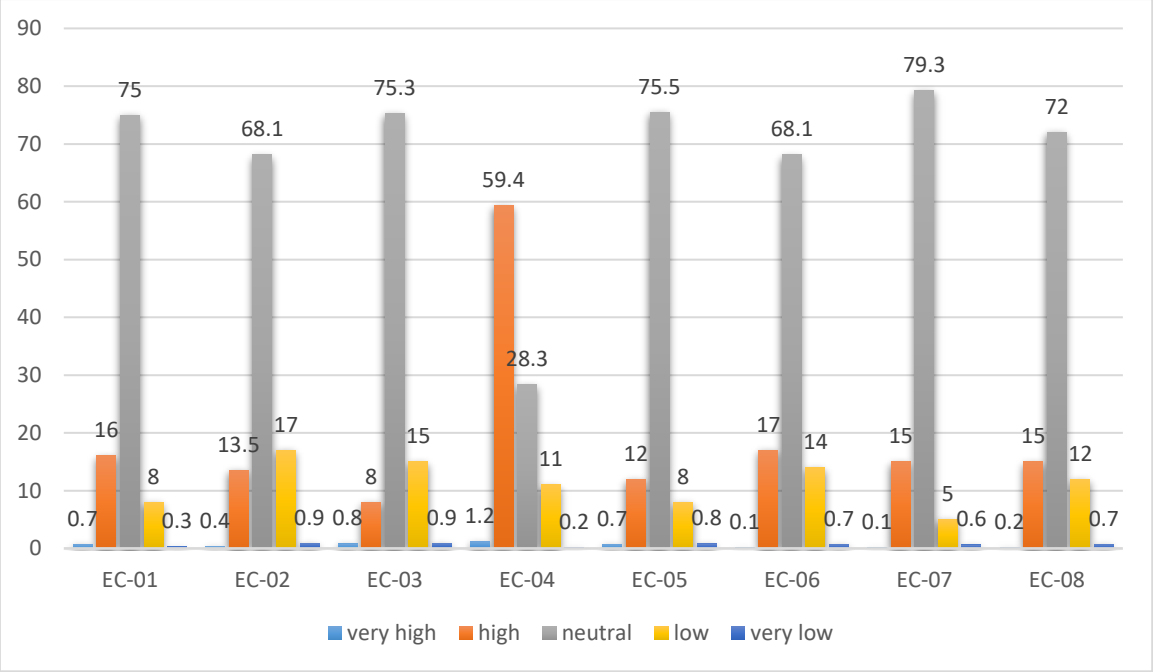


Figure 23 Economic Impacts

Results of chi square on each sub indicator of economic impact on developed and under developing housing scheme is given in the below table.

Table 15 Chi-square test on Economy

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
EC-01	HS provides employment opportunities	2.91	2.90	5.98	0.050
EC-02	Increase in household expenditure	3.11	2.93	13.81	0.003
EC-03	Provision of labor from village to HS	3.02	3.12	14.40	0.001
EC-04	Increase in land price	2.13	2.91	93.72	.000
EC-05	Increase in investment opportunities	3.02	2.88	5.40	0.067
EC-06	Increase in local employment	2.87	3.09	9.67	0.008
EC-07	Increase in village's productivity	2.91	2.89	0.37	0.828
EC-08	Increase in business opportunities	2.92	3.03	7.68	0.021

New developments have positive impact on economy. High economic growth leads to higher tax revenue. The economic indicator increases in land price have a clear significant

difference (x^2 = 93.72, p-value 0.000) it means increase in land price is different between developed and under developing. Increase in investment opportunity (x^2 = 5.40, p-value 0.067), increase in villages productivity (x^2 = 0.37, p-value 0.828) have no significant difference. These indicators have same impacts on both categories. Remaining factors like Housing scheme provides employment opportunities, increase in household expenditure, Provision of labor from village to HS, increase in local employment, increase in business opportunities have a (p-value < 0.05) shows the significant difference between developed and under developing.

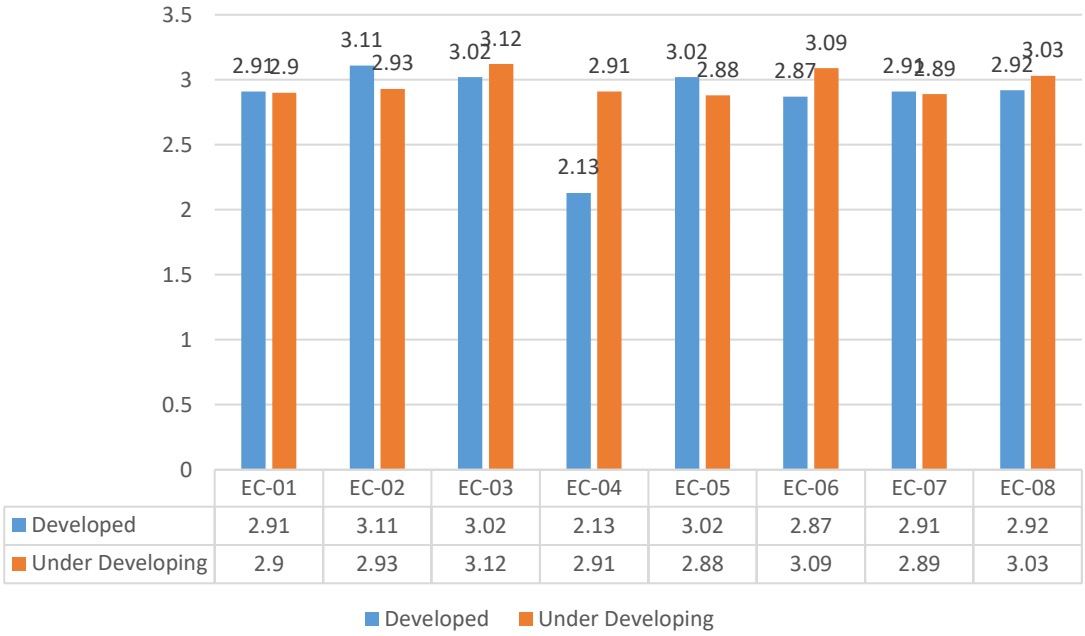


Figure 24 Mean Value of Economy indicator

4.12.7 Environmental

New development clearly is not a neutral procedure. It has so many impacts but environmental impacts include increase consumption of non-renewable resources, level of pollution, loss of environmental habitat, cutting of fruit trees, consumption of green land and water resources. EN-01 to EN-06 are the codes of Consumes villages land, cutting of fruit trees, Loss of any species or natural habitat, Consumption of agricultural land, Increase

in air pollution and Enough water resources. Below figure is showing the results on Likert scale from very high to very low.

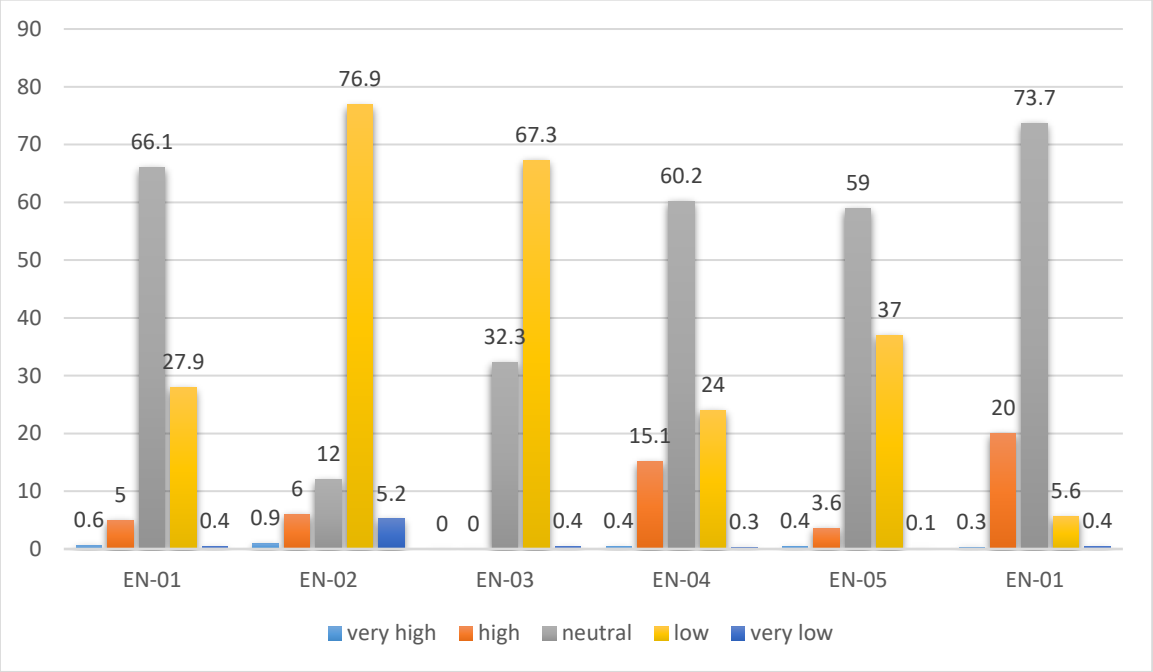


Figure 25 Environmental impacts

Following table is showing the results of environmental impact chi square test on developed and under developing housing schemes.

Table 16 Chi-square test on environmental indicator

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
EN-01	Consumes villages land	3.24	3.21	1.15	0.764
EN-02	Cutting of fruit trees	3.89	3.71	12.86	0.005
EN-03	Loss of any species or natural habitat	3.67	3.68	1.04	0.592
EN-04	Consumption of agricultural land	2.95	3.23	13.87	0.003
EN-05	Increase in air pollution	3.25	3.40	9.30	0.026
EN-06	Enough water resources	2.77	2.96	16.52	0.001

Data analysis shows water resources (X2 = 16.52, p-value 0.001) have a significant difference between both selected variables. On the other hand, consumption of village's land (X2 = 1.15, p-value 0.764), loss of any species and natural habitat (X2 = 1.04, p-value 0.592) have no difference between the variables of developed and under developing. Remaining Cutting of trees, consumption of agricultural land, increase in air pollution having p value a (p-value <0.05) shows that factors have significant different.

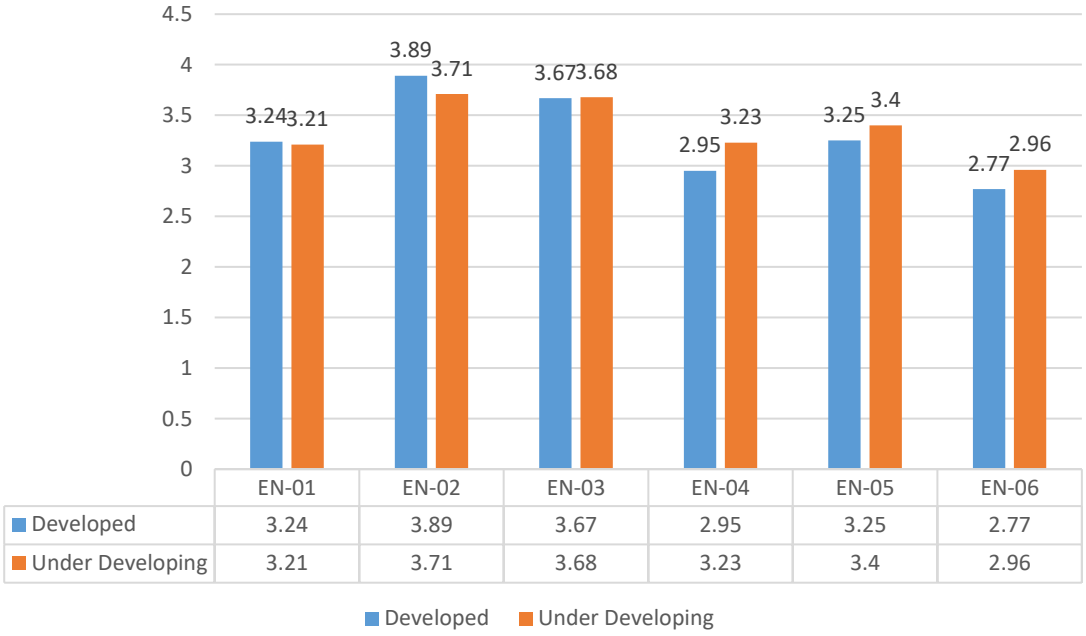


Figure 26 Mean Value of Environmental indicator

4.12.8 Gender

Indicator gender is very important and has a huge importance in any development (Güngör, 2012). Gender equality in education, business, employment, have direct impact on the economy (Hoffmann, 2016).Sustainable development relies on the elimination of gender differences (Teo, 2019). Codes from G-01 to G-10Women headed household, found employment in HS, runs small business, Girls started to go school and college of HS, Provision of domestic service to HS, Women started to get technical education, Women leaves agricultural activities, Cultural change, Availability of gynecological facilities in

village and Avail gynecological facilities of HS are showing the value of Each sub indicator on Likert scale from very high to very low.

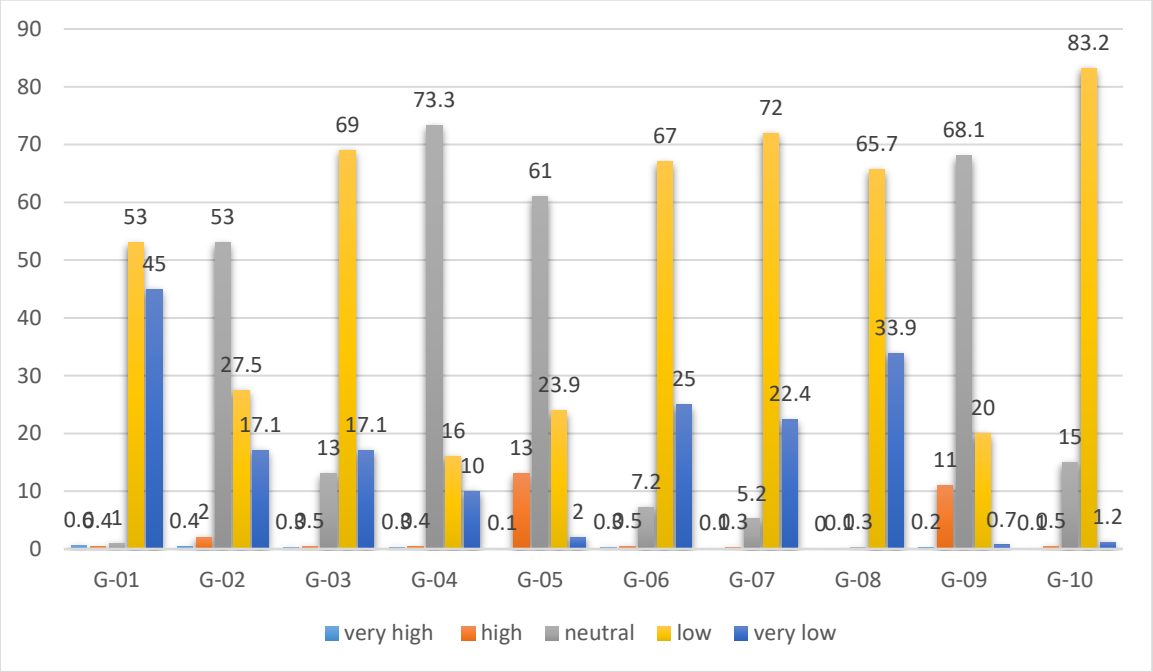


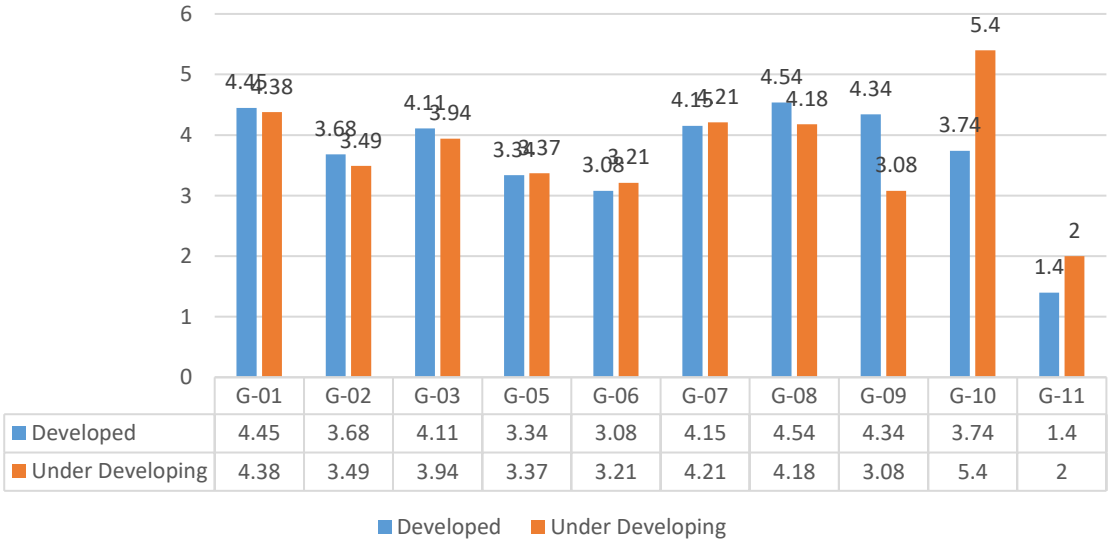
Figure 27 Impact on gender

After segregation of housing schemes developed and under developing Chi Square test was performed to know the impact of gender indicator and results of analysis are given below in the table.

Table 17 Chi-square test on gender indicator

CODE	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	X^2	p-value
G-01	Women headed household	4.45	4.38	8.90	0.031
G-02	Found employment in HS	3.68	3.49	17.51	0.001
G-03	Runs small business	4.11	3.94	8.89	0.012
G-05	Girls started to go school and college of HS	3.34	3.37	0.89	0.827
G-06	Provision of domestic service to HS	3.08	3.21	14.85	0.002
G-07	Women started to get technical education	4.15	4.21	2.67	0.263
G-08	Women leaves agricultural activities	4.54	4.18	2.41	0.491
G-09	Cultural change	4.34	3.08	1.25	0.534
G-10	Availability of gynecological facilities in village	3.74	5.4	6.08	0.048
G-11	Avail gynecological facilities of HS	1.40	2.00	251.0	.000

In this study results shows that availing of gynecology facility of nearby housing scheme has a huge significant difference with (x^2 = 251.0, p-value 0.000). Other factors like girl started to going to schools of nearby housing schemes (x^2 = 0.89, p-value 0.827), Women started to get technical education (x^2 = 2.67, p-value 0.263), Women leaves agricultural activities (x^2 = 2.41, p-value 0.491) and cultural change (x^2 = 1.25, p-value 0.534) have a huge significant difference. Remaining factors women headed household, found employment in housing scheme, Runs Small business, provision of domestic services to housing scheme, Availability of gynecology having p value a (p-value < 0.05) shows that factors have significant difference between developed and under developing.



	G-01	G-02	G-03	G-05	G-06	G-07	G-08	G-09	G-10	G-11
Developed	4.45	3.68	4.11	3.34	3.08	4.15	4.54	4.34	3.74	1.4
Under Developing	4.38	3.49	3.94	3.37	3.21	4.21	4.18	3.08	5.4	2

Figure 28 Mean Value of Gender Indicator

4.12.9 Overall Impact Assessment

The relationship in rural and urban is changing not only in Pakistan but all over the world. Two types of urban development's trends are now happening, one is expansion of urban areas and second is new development on peri-urban areas. Urban Expansion is not a threat

to the rural areas because the expansion has not much impacts on rural areas. But new development has powerful impact on rural areas.

Table 18 Overall impact assessment

Sr.no	INDICATORS	DEVELOPED $\bar{x}$	UNDER-DEVELOPING $\bar{x}$	p-value
1	Education	3.80	3.05	0.000
2	Health	3.68	3.05	0.000
3	Market	2.89	2.98	0.000
4	Roads and connectivity	3.28	3.28	0.436
5	Social	3.34	3.21	0.000
6	Economical	2.86	2.98	0.001
7	Environment	3.29	3.36	0.255
8	Gender	3.68	3.19	0.100

Indicators selected to know the impacts of mega housing project on rural areas gave some surprising results. Results of education indicators shows that the education facility of nearby housing scheme is beneficial for some of the rural residents who can afford it. Affordability of education is low. But few factors like some young educated people started to providing home tuition in nearby housing scheme and earning well. Education indicator with mean value of 3.80 in developed housing schemes and 3.05 in under developing housing schemes p-value 0.000 shows that this indicator has significant difference between developed and under developing housing schemes.

Some health facilities Avicenna medical Centre, Foundation university college of dentistry & hospital, Integrative medical center, Hijama medication cupping therapy, Islamabad Diagnostic Centre, Basheeran Umar eye Hospital, Yusra General Hospital, DHA clinic and Dental Care Center, dental art clinic, Islamabad diagnostic center integrated medical center, Soch psychological clinic, Begum Akhtar Rakshana memorial welfare trust and Bahira international hospital are available in developed housing schemes. Results Shows that the

affordability of these medical facilities is not much good. People of surrounding areas only avail these facilities in case of emergency and to consult some specialist and the satisfaction level of those who avail these health facilities is good. Growth of health facility in surrounding areas due to the presence of existing health facilities have no significant impact. Provision of the ambulance service to the surrounding areas is less and people usually prefer some other ambulance services like 1122 and Eidhi ambulance service.

Green fresh, DHA avenue mall, Commercial Plaza, Satray studio, River Garden cash and carry, Chenone store DHA II, Al Siraj market, Imtiaz super market, Walayat market, Defence mall, Zamzama general, Zemheighhts shopping mall, 7 eleven cash and carry, Life plus paper store, Ascon business centre, Continental tower, Liberty tower, Skyward tower, The pearl mall & residency are some market facilities available in selected housing schemes. There are many other shops and markets available but mostly people of surrounding areas prefer local market. There are reasons of preferring local market first is affordability, second the transportation and third is high price difference. Business opportunities is somehow increasing in surrounding areas of housing schemes.

Some major roads GT road, Main link road, Morgahdha, Link Road Bahriaexpy, Express Highway, Japan road, Islamabad expressway, Faisal Avenue, Kahuta road, Express way, Bahriaexpy, Usman Ghani ave, Umer avenue, Rawalpindi jandMianwali road, M1, Srinagar Highway, Link Road, Chakri road, Chahan road and Lahore Islamabad motorway providing accessibility and connectivity to the selected housing societies. These main roads improve connectivity in a positive manner. Business and social trip from surrounding areas to housing schemes are not very frequent. The factor of condition of village's road is normal but provision of public transport from rural areas to housing schemes is very low that's why trips frequency in housing schemes is also low. Improvement of village's road infrastructure due to the presence of housing scheme is neutral. Significant impact was shown in the

results on increase in land price due to the presence of housing schemes. Investment opportunities, local employment, village's productivity and business opportunities are increased and have positive impact on rural areas due to the nearby housing schemes. Environmentally there is a negative impact on water resources and increase of air and noise pollution. Clear impact of housing scheme on gender is provision of domestic service from rural areas to the housing scheme. Many women started to providing domestic services in the nearby housing schemes. Remaining factors are not significantly impacted by the housing schemes. Overall Roads and connectivity, Environment and Gender with P-value 0.436,0.255 and 0.100 respectively have no significant difference between developed and under developing.

Rural areas and new developments play a crucial role in accelerating country's development through flow of services, facilities, people, information, technology from and to new development and rural areas. This interdependency is very important to their respective development of economy and social factors. New developments are unthinkable if the rural areas are socially, physically and environmentally isolated places. Theoretically, this research will provide the baseline for indicator-based approach for future research on real estate and its impacts. Education, Health, Market, Social and environment indicator of developed and under developing housing schemes having (p-value < 0.05) shows that factors have significant difference, it means both have different impact on surrounding rural areas. The impact of roads and connectivity, Environment and gender (p-value > 0.05) shows that factors have no significant difference between developed and under developing housing schemes it means that these three indicators of developed and under developing housing areas have same impacts on rural areas. Furthermore, application of advance statistical analysis techniques can provide a more precise depiction of impacts of these indicators on rural areas.

4.13 Attracting factor of these mega housing projects around rural areas

Housing is one of the basic needs of human life. It is the significant part of social and physical environment and in developing countries housing backlog is a very important issue. Housing is not the basic need, it shows the quality of life and living standard. If housing considered in an investment way it promotes economic activities and employment opportunities. The relation between housing and poverty is very strong (Crisp, 2016) .Good quality housing is always associated with infrastructure like water supply, drainage and sanitation, electricity and waste disposal (SOUZA, 2019). But this infrastructure has been ignored in developing countries. Hosing in presence of proper infrastructure can provide a wide range of positive impacts like improved health, safety from hazard, security, privacy and social well-being. Preferring individual housing on low-cost land is encouraging these Mega housing projects on peri urban land.

In Pakistan there is a housing backlog of 4.3 million units. There is a need of 300,000 housing units per years in Pakistan (Dowall, 2009).This housing unit's deficiency is the biggest outcome of continued urbanization. It is estimated that almost 25 % to 33 % urban dwellers of developing countries are living in poverty and can't afford adequate housing. (Tariq, 2017). Due to rapid urbanization, it become a need to develop new housing projects. Lack of appropriate space for these housing projects it usually located at the urban fringe and also have a huge impact on surrounding area. (Hameed, 2007).

Developers generally agrees that development and growth are influenced by four factors (Moldovan, 2019).

- Human resource
- Physical Capital
- Natural Resource
- Technology

There are number of factors connectivity, land, Economy, Social, Educational, health, gender and existing facilities or existing infrastructure (Tuzová, 2017) area attracting the growth of Mega Housing project near rural areas.

To know the impacts of these attraction factors "Composite Index Method" is used. Composite index Method permit us to measure, with a number, the relative varieties inside a gathering of factors after moving starting with one circumstance then onto the next (Greco, 2018).After interviewing of senior town Planners, experts and from extensive literature review attraction factors of mega housing projects were shortlisted and grouped into seven factors: Roads and Connectivity, Land, Existing facilities, Economy, Gender, Education and Health as shown in Table 24.

Table 19 Selection of parameters

Sr. no	Parameters	References
1	Roads and Connectivity	(housing, 2013),
2	Land	(Dowall, 2009)
3	Existing facilities	(Dee Hardekar and Shay Chakraborty, 2018)
4	Economy	(housing, 2013)
5	Gender	(Sohail M. , 2014)
6	Education	(Joseph S. Rabianski, 2011)
7	Health	(Joseph S. Rabianski, 2011)

Construction of Composite index

Composite index is very simple to understand and analyze. Composite index construction includes selection of variables, method of aggregation, normalization and weighting to apply. All indicators were normalized with using the range (0.1- 5.5), using mini, maxi methods, where higher score represent high impact and lower score represent lower impact. Mini maxi method involves taking minimum and maximum values. Experiential form a

scale so that they have and identical range. The main advantage of this method is its ability to measure performance based on the higher and lower performance. Concluding Step is weighting and aggregation of the normalization data. Additive aggregation (arithmetic average) by assigning equal weighting to the set of indicators. The robustness of the results is assessed by using alternative weight still, results do not significantly value either in term of values when these are classified according to the value.

4.13.1 Roads and Connectivity

Roads are prioritizing highest in ranking of any development (Wray, 2000). Moreover, a good road and connectivity also plays a great role on poverty elimination and creating economic opportunities (Walker, 2015). Roads open up more areas and stimulate social and economic development. Data was collected to know the attracting factors the growth of Mega Housing project near rural areas. Some major roads GT road, Main link road, Morgahdha, Link Road Bahriaexpy, Express Highway, Japan road, Islamabad expressway, Faisal Avenue, Kahuta road, Express way, Bahriaexpy, Usman Ghani ave, Umer avenue, Rawalpindi jandMianwali road, M1, Srinagar Highway, Link Road, Chakri road, Chahan road and Lahore Islamabad motorway providing accessibility and connectivity to the selected housing societies. These main roads improve connectivity in a positive manner. Availability of existing major road is a very important factor for attracting the new development. From selected villages, out of 251 respondents 93.6 % respondents said that they have main road near their village, remaining 6.4 % responds have no main road near their village. Majority of respondents shows that main road is exist near their villages. Connectivity to the residential area of people is showing that 88.8 % respondents have access of roads to their houses and 11.2% are little isolated from the community and have no direct access of roads to their dwelling. In every road network accessibility is very important because the success ratio of every road network is dependent on accessibility.

Results showed that 90.8 % respondents have access to the main road and only 9.2 % respondents have low accessibility to the main road.

Table 20Attraction of road and connectivity

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	You have any main road near your village?	R1	Yes	235	93.6	1.06
			No	16	6.4	
2	Is main road near to your house?	R2	Yes	223	88.8	1.11
			No	28	11.2	
3	Is main road easily accessible to you?	R3	Yes	228	90.8	1.09
			No	23	9.2	
4	Any public transport is available?	R4	Yes	195	77.7	1.22
			No	56	22.3	
5	Is this Public transport being affordable for you?	R5	Yes	216	86.1	1.14
			No	35	13.9	
6	Condition of roads and street in your village is good?	R6	Yes	167	66.5	1.33
			No	84	33.5	
7	These roads reduce your commuting cost?	R7	Yes	181	72.1	1.28
			No	70	27.9	
8	The main road improves the connectivity of your village?	R8	Yes	180	71.7	1.28
			No	71	28.3	

Availability of public transport is not only important for the resident of that area but also, it's surrounding area too. In our research area 77.7 % respondent said that they have a public

transport in their area and 22.3 % people have no access to the public transport because of the transport fixed routes. Affordability of public transport have an important role in the usage of public transport, 86.1 % respondents can afford the available public transport and 13.9 % people said that available public transport is not affordable for them. Existing roads network within the villages shows the chances of mobility within the rural areas. 66.5 % people are satisfied from existing road network of their villages and 33.5 % respondents said that the condition of their village's road is not very well. Graphical representation of above results is showing below in chart. To know the impact of roads and connectivity composite index and cross tabulation method was used. Following table is depicting the impacts of roads and connectivity of each selected rural area.

Table 21 Composite index of road and connectivity

Selected Rural Areas	Low level of attraction	Medium level of attraction	High level of attraction	Total
Chak 30 AC	0	5	9	**14**
Chak 30 AD	0	8	7	**15**
Kotha Kalan	0	8	11	**19**
Kanyat	1	8	25	**34**
Gurha	0	8	18	**26**
Kharakkan	0	10	17	**27**
Village Ghurbal	0	13	10	**23**
DhokDhumman	2	11	7	**20**
Pahrma	0	12	13	**25**
Maira Sharif	0	11	9	**20**
DhokBudha	0	8	7	**15**
Dhok Shahan	1	8	4	**13**
Total	**4**	**110**	**137**	**251**

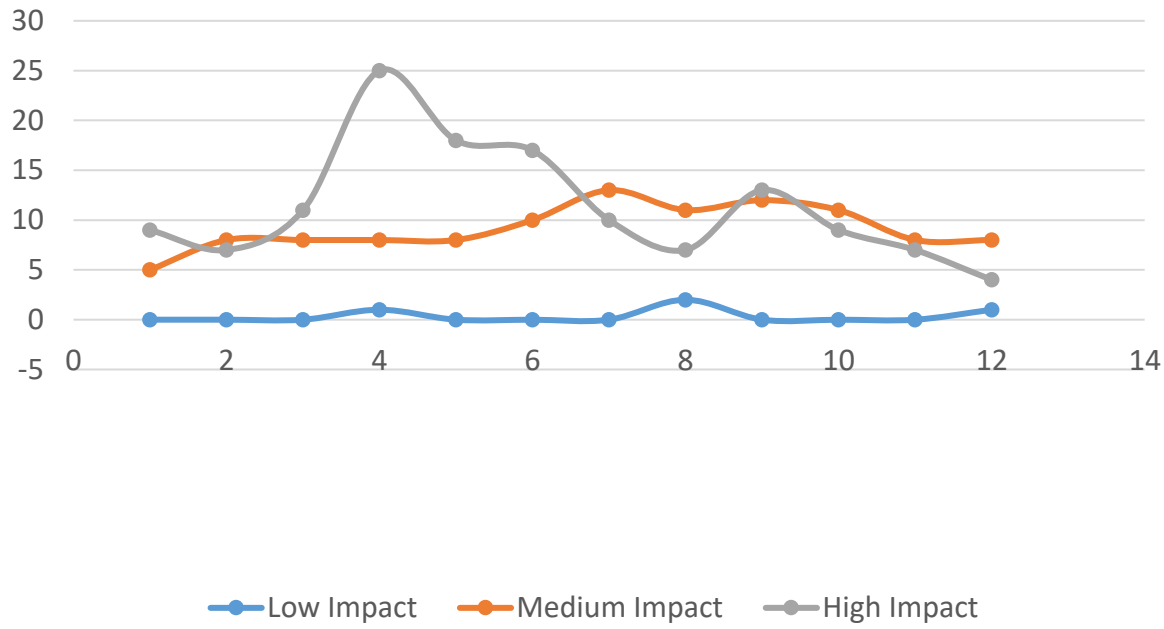


Figure 29 Attraction of Roads and Connectivity

Mega housing projects are the results of economic and social activities. The presence of roads can't be overemphasized as this connectivity is crucial for its success. The analysis was so valuable to know the attraction factors of these mega housing projects. Above radar chart and table is clearly showing that the high impact result of roads and connectivity more than the medium and low impacts. As our selected housing projects were also near some major roads to provide accessibility to these residential projects. DHA phase I&II have access from GT road, Main link road, Morgahdha, Link Road Bahriaexpy, Express Highway, Japan road. Bahria Town phase VIII have access from Islamabad expressway, Faisal Avenue, Kahuta road, Express way, Bahriaexpy, Usman Ghani ave, Umer avenue. In developing housing Projects like Mumtaz city and capital Smart City, Rawalpindi jandMianwali road, M1, Srinagar Highway are providing accessibility to this project. Chakri road, Chahan road and Lahore Islamabad motorway providing accessibility and connectivity to the Capital Smart City. Adequate connectivity serves as a backbone for the success of such Mega Housing Projects. These Road networks also attracts economic

development and commercial activities along it. Accessibility and connectivity of these Mega housing projects effects the price of housing. Location of project have also a huge impact on housing price. The price of housing is increased in the presence of such facilities. On the other hand, along with residential activities these roads are becoming the cause of economic growth and increase in commercial activities have attracted migrants from all over the city which make these housing project successful.

4.13.2 Land

Mega housing projects are carried out with the aim of providing adequate housing facilities. Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway(Wray, 2000) but also availability of land on comparatively low price.

Table 22Attraction of Land

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	Do you own any agricultural land?	L1	Yes	89	33.5	1.35
			No	162	64.5	
2	Your land price is equivalent to the surrounding areas?	L2	Yes	91	36.3	1.64
			No	160	63.7	
3	Any vacant land available in your village?	L3	Yes	174	69.3	1.31
			No	77	30.7	
4	Are you willing to sale your land?	L4	Yes	174	69.3	1.32
			No	77	30.7	
5	Slums around your village?	L5	Yes	146	58.2	1.42
			No	105	41.8	
6	Your Village's land price is increasing	L6	Yes	136	54.2	1.46
			No	115	45.8	

In the study area result showed that there is more vacant land than agricultural land because only 33.5 % people own agricultural land and their land prices are lower than the city and

surrounding urban areas. Only 36.3 % people said that their land price is same as the surrounding areas. According to the responses availability of vacant land is 69.3 % and remaining 30.7 % people said that they have no vacant land around their houses and areas. Mostly people said if their land can be sold out on a good price, they are willing to sale it and results showed that 69.3 % people are willing to sale their land but on good price. The factor slums around their villages and increase in village's land price is had a response of almost same. Half of the respondents said that their land price is increasing and according to almost half of them land price is not increasing.

Table 23 Composite index of land

Selected Rural Areas	Medium Impact	High Impact	Total
Chak 30 AC	11	3	14
Chak 30 AD	6	9	15
Kotha Kalan	0	19	19
Kanyat	0	34	34
Gurha	0	26	26
Kharakkan	0	27	27
Village Ghurbal	2	21	23
DhokDhumman	8	12	20
Pahrma	12	13	25
Maira Sharif	13	7	20
DhokBudha	3	12	15
Dhok Shahan	5	8	13
Total	60	191	251

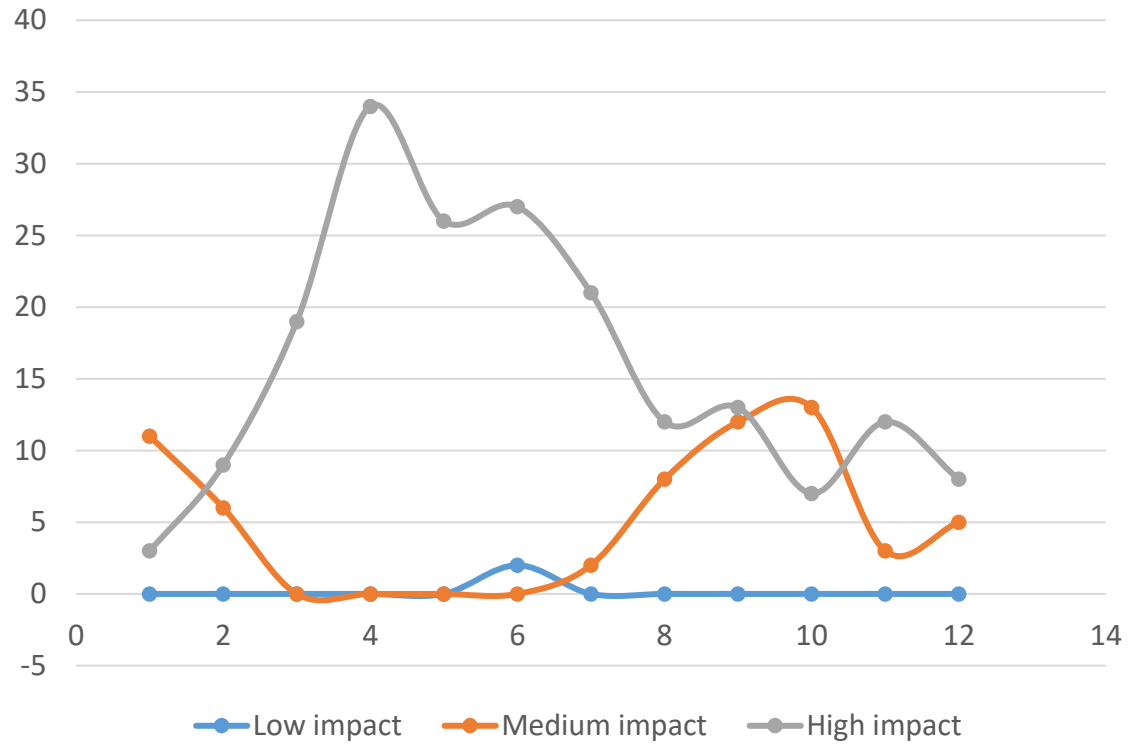


Figure 30 Attraction of Land

Pakistan is transforming from agricultural economy to manufacturing and service-based economy leading to massive urbanization. And due to urbanization urban areas has more housing demand. To fulfill this demand more housing projects has been started. And these housing projects needs more land. Land is mostly available on peri-urban areas, which attracts these real estate market towards it. Land is the critical factor for selecting the site for housing developments. Results in above radar chart and literature shows us the impact of land on attracting the development of mega housing project is higher than the road and connectivity. These projects mostly use the peripheral land (Hameed, 2007). The reason of choosing this land is, the price of land is lower than the surrounding urban areas. Along with reasonable prices there are big chunks of land, vacant and agricultural both are available. Another reason, people are easily willing to sale their land. 69.3% respondents were willing to sale their land, if good price is offered.

The development of mega housing projects on the outskirts of cities provides housing but this new development the relationship in rural and urban is changing not only in Pakistan but all over the world. New developments are unthinkable if the rural areas are socially, physically and environmentally isolated places. So, the existing features and facilities of rural areas are very important. If these facilities like water, Electricity, Gas, sewerage & drainage system and availability of water for irrigation are available they attract new developments a lot. Following table is showing the frequencies of the availability of these facilities.

Table 24 Attraction of existing facilities

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	Availability of water in your village?	EF1	Yes	174	69.3	1.31
			No	77	30.7	
2	Water quality is good?	EF2	Yes	157	62.5	1.37
			No	94	37.5	
3	Availability of electricity?	EF3	Yes	224	89.2	1.11
			No	27	10.8	
4	Availability of Gas?	EF4	Yes	149	59.4	1.41
			No	102	40.6	
5	Have sewerage or drainage system in your village?	EF5	Yes	183	72.9	1.27
			No	68	27.1	
6	Water available for irrigation?	EF6	Yes	118	47.0	1.53
			No	133	53.0	

The ratio 69.3 and 30.7 is showing that the water is available to 69.3 % respondents from any resource. It includes boring water, tank system, public supply of water and very few hand pumps and tube wells and remaining 30.7 % people mostly were from Chak 30 AD and village Gurha said that there is no adequate water for their community. They were complaining about low water table and poor water quality. But out of these 69.3 respondents

62.5 % people were not satisfied from the quality of water. Availability of water for irrigation system, 47.0 % said that water for irrigation is available from the sources of existing Nallas and canal. Fewer people use tube wells for irrigation. Remaining 53 % said water is mostly available in the season of Monsoon.

Table 25 Composite index of existing facilities

Selected Rural Areas	Low Impact	Medium Impact	Total
Chak 30 AC	10	4	14
Chak 30 AD	12	3	15
Kotha Kalan	17	2	19
Kanyat	31	3	34
Gurha	25	1	26
Kharakkan	27	0	27
Village Ghurbal	23	0	23
DhokDhumman	19	1	20
Pahrma	25	0	25
Maira Sharif	18	2	20
DhokBudha	6	9	15
Dhok Shahan	9	4	13
Total	222	29	251

Most important factor “electricity” is available in and around most of the villages. Almost 90% people said that the electricity is available only 10 % people have no access to electricity mostly were living in slums or isolated from village community where electricity line was not existing. Availability of natural Gas has a huge impact on land price. In selected villages 59.4 % respondent had that facility and 40.6 % people are using alternate resources

because of non-availability of Gas. Sewerage and drainage system plays a crucial role in any infrastructure and development. Collected data shows that 72.9 % respondents said that they have proper sewerage and drainage system but it needs to be maintained but 27.1 % people still have old sewerage and drainage system like open drainage system. Graphical representation of response yes is showing which factor of existing facilities is attracting the most.

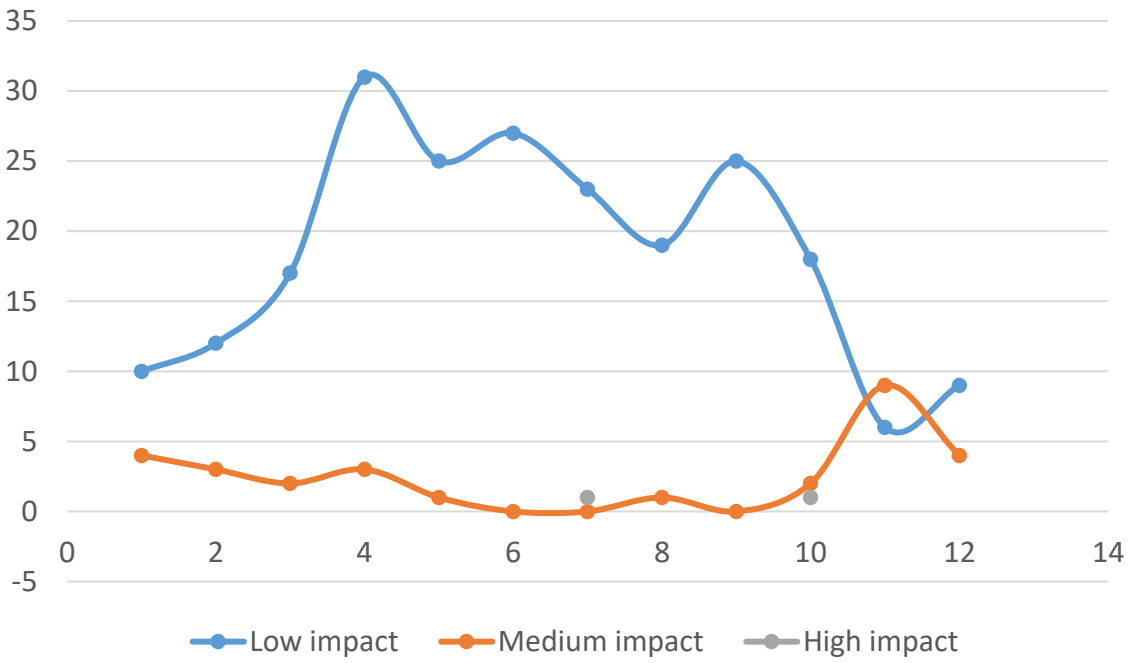


Figure 31 Attraction of Existing facilities

Infrastructure can affect human lives hugely. Adequate infrastructure and services fill in as spine for development and are fundamental for local area wellbeing, security, and personal satisfaction. Developing a residential neighborhood is a long-term investment for any community. “For most developers, this involves taking a step back and reassessing the objective of the finished product. Presence of the infrastructure necessary to serve the proposed development is essential for the growth of a new community..

Rural Areas selected around mega housing projects; results are showing that 30.7 % respondents have no access to water but water is available to 69.3 % respondents.37.5 % of respondents were not satisfied from the quality of available water. Major facilities like electricity and gas, in most of the area's electricity was available but supply of Gas was available to only 40.6 % respondents. Remaining respondent use gas cylinders, Bio gas, fire wood and saw dust for their domestic use. All the given percentages are showing that the reason of why the existing facilities and infrastructure has a low impact in this study.

4.13.3 Economy

Economic factors are usually determining the economic condition of some area. To know about the economic condition of rural area before stating the new development is very important because it is necessary to know how the new development can attract the rural areas and make its economy better. Second the economy of both new development and rural area can be interdepend on each other in a way to purchase raw material from rural areas, to provide employment opportunities to people, the need of labor can be fulfilled from nearby rural area, so it can provide work opportunity for labor and new development can get labor from nearby areas easily. Following table is showing the responses of residents for the economic condition. Table show that employment opportunities within the village is low, its 37.1 % because most of our respondents were educated and they can't find employment according to their scope within the rural area.

Table 26Attraction of economy

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	Any employment opportunities in your village?	EC1	Yes	93	37.1	1.63
			No	158	62.9	
2	Investment opportunities in your village?	EC2	Yes	78	31.1	1.69
			No	173	68.9	
3	Provide labor to nearby area?	EC3	Yes	140	55.8	1.44
			No	111	44.2	
4	Availability for raw material?	EC4	Yes	113	45.0	1.55
			No	138	55.0	
5	Small industries?	EC5	Yes	106	42.2	1.58
			No	145	57.8	

As the previous table showed that land prices are comparatively lower than the surrounding area and also the low average of employment opportunities with less development have fewer investment opportunities, 68.9 % respondents said that there are not much investment opportunities only 31.1 % respondent said that there are investment opportunities but on a very small scale. Home based or small industries have a response of almost same 42.2 % people said there are small industries like embroidery, Jewelry, ceramics, cutlery, Wood work and sport goods and according to more than 57% people there were no small industries.

Table 27 Composite index of Economy

Selected Rural Areas	Low Impact	Medium Impact	Total
Chak 30 AC	5	9	14
Chak 30 AD	1	14	15
Kotha Kalan	1	18	19
Kanyat	15	19	34
Gurha	0	26	26
Kharakkan	0	27	27
Village Ghurbal	10	13	23
DhokDhumman	0	20	20
Pahrma	13	12	25
Maira Sharif	0	20	20
DhokBudha	7	8	15
Dhok Shahan	10	3	13
Total	62	189	251

Economy is one of the considerable attraction factors for new development. The above table shows that 62.9 % respondents said that they have no employment opportunities in their area. New development can easily attract this population by providing employment opportunities.68.9 % respondents says that they have no investment opportunities. New development an provide investment opportunities not only in residential side but also in commercial activities. It can make these housing projects successful and also rental housing has a huge attraction for rural residents

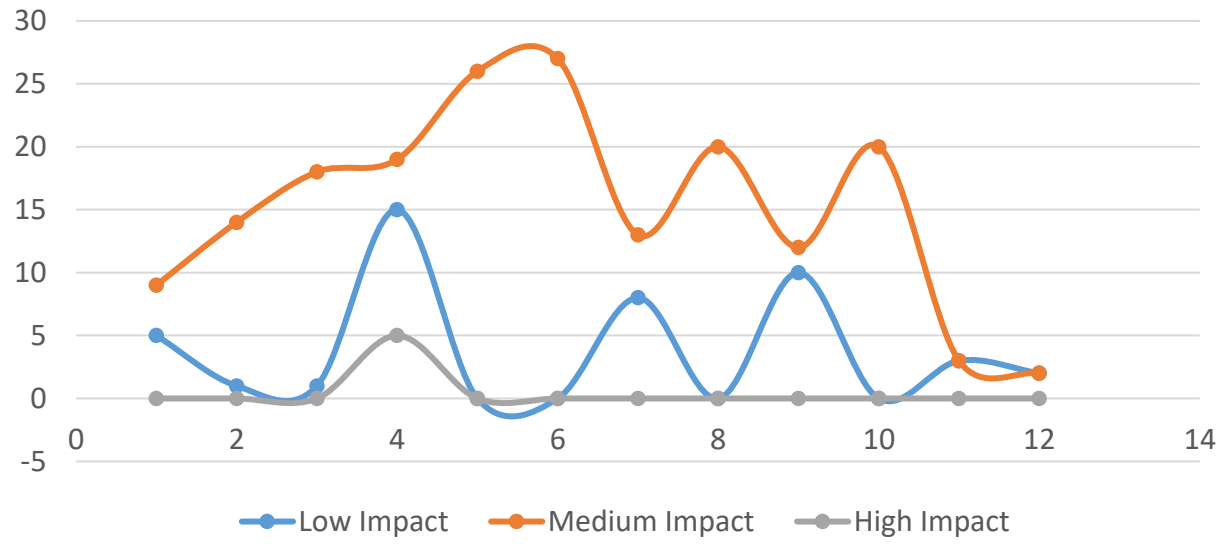


Figure 32 Attraction of Economy

Construction workers, labor usually live closer to the construction site and thus they spend substantial part of their wages in local community which is also beneficial for these developments. Prosperity of new development and rural residents of the business, provision of goods and transport, provision of raw material allowing new developers to purchase more from rural areas. Scale of new project and economy of surrounding areas are interlinked. Mega housing projects can provide mega economic opportunities. Analysis of the data shows that the economic factor has not much higher and not much lower impact. The impact of economy to attract new development is medium in this study.

4.13.4 Gender

Gender factor is very important and have a huge importance in any development. In all rural development women of rural areas are the key agent (Sohail, 2014). They can play a catalytic role in sustainable rural development, its economy and social values. They also play a role in agriculture by doing work in fields and food production. Empowering of women can help in eradicating the poverty of rural areas but also the overall economy. It is important to have resources for them. Following table is showing three factors of rural women, how they are taking part in the economy of the rural areas.

Table 28 Impact of Gender

Sr. No.	Indicators	Codes	Response	Frequency	Percentage	Means
1	women run small business in your village?	G1	Yes	117	46.6	1.53
			No	134	53.4	
2	women provide domestic services?	G2	Yes	179	71.3	1.29
			No	72	28.7	
3	women leave agricultural activities and start doing paid labor?	GE	Yes	143	57.0	1.43
			No	108	43.0	

Table 29 Composite index of gender

Selected Rural Areas	Low Impact	Medium Impact	Total
Chak 30 AC	14	0	14
Chak 30 AD	15	0	15
Kotha Kalan	19	0	19
Kanyat	34	0	34
Gurha	26	0	26
Kharakkan	27	0	27
Village Ghurbal	18	5	23
DhokDhumman	16	4	20
Pahrma	25	0	25
Maira Sharif	20	0	20
DhokBudha	15	0	15
Dhok Shahan	4	9	13
Total	233	18	251

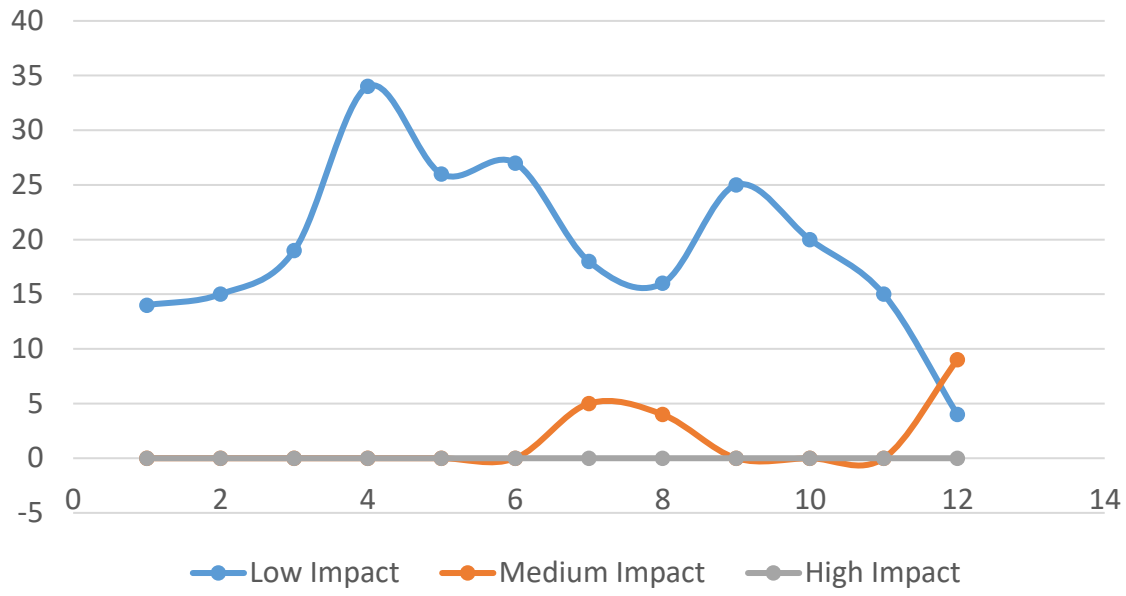


Figure 33 Attraction of Gender indicator

Small industries include embroidery, Jewelry, ceramics, cutlery, Wood work and sport goods etc. the ratio of running small industries in rural areas is less, only 46.6 % women are running small businesses remaining 53.4 % are mostly housewives or doing domestic work and some other jobs. Domestic services include many roles and responsibilities of the households like house work and child rearing. 71.3 % respondents are directly and indirectly providing domestic services and many of women 57% leaves agricultural activities and started doing paid labor. Results drawn from composite index show that the factor gender has a low impact on attracting new development because small business, provision of domestic services and paid job have a very small impact to make new project successful. That's why this factor has a low impact.

4.13.5 Education

There is lack of educational facilities in rural areas like quality school system, colleges, tuition centers and universities. New development with good educational facilities can attract most of the rural people towards it. Following table is showing the collected data and its frequency.

Table 30Attraction of education indicator

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	Any College or university in your village?	ED1	Yes	38	15.1	1.85
			No	213	84.9	
2	Any technical education institute in your village?	ED2	Yes	59	23.5	1.76
			No	192	76	

Collected data showed that the existing facility of colleges and university is only 15 % it means there is a huge opportunity to provide them educational facilities but affordability is also an important element. If these facilities are affordable for rural community, they will avail these facilities more. Availability of technical institute is also very low only 23 % people said that there is technical institute near them. Education in every sense is one of the important factors for any development. It not only provides education but also provide job opportunities and play a very vital role in fortifying economic and social progress improving income distribution. It improves the quality of community's lives and leads to broad social benefits to individuals and society.

Table 31 Composite index of Education

Selected Rural Areas	Low Impact	Medium Impact	Total
Chak 30 AC	14	0	14
Chak 30 AD	15	0	15
Kotha Kalan	9	10	19
Kanyat	20	14	34
Gurha	0	26	26
Kharakkan	11	16	27
Village Ghurbal	0	23	23
DhokDhumman	20	0	20
Pahrma	7	18	25
Maira Sharif	12	8	20
DhokBudha	15	0	15
Dhok Shahan	13	0	13
Total	136	115	251

Some educational institutes in DHA phase I area Army Public School, Roots School System, Alnoor tutors Academy, Foundation University College of Nursing, DHA orchard are serving this area. In DHA phase II Free sky Institute of Aviation and Technology Islamabad, Army Public School, DHA-I Army Public School, Geospatial Research and education Lab, DHA education System (Cambridge Stream) and many other educational institutes are located in this phase. IELTS Preparation Institute, Dr. Abdul Qadeer Khan School & College, Apple Group of School, Future World School, Leads School System, Rots

Millennium School and some more institutes are providing the educational facilities in Bahira Town phase VIII.

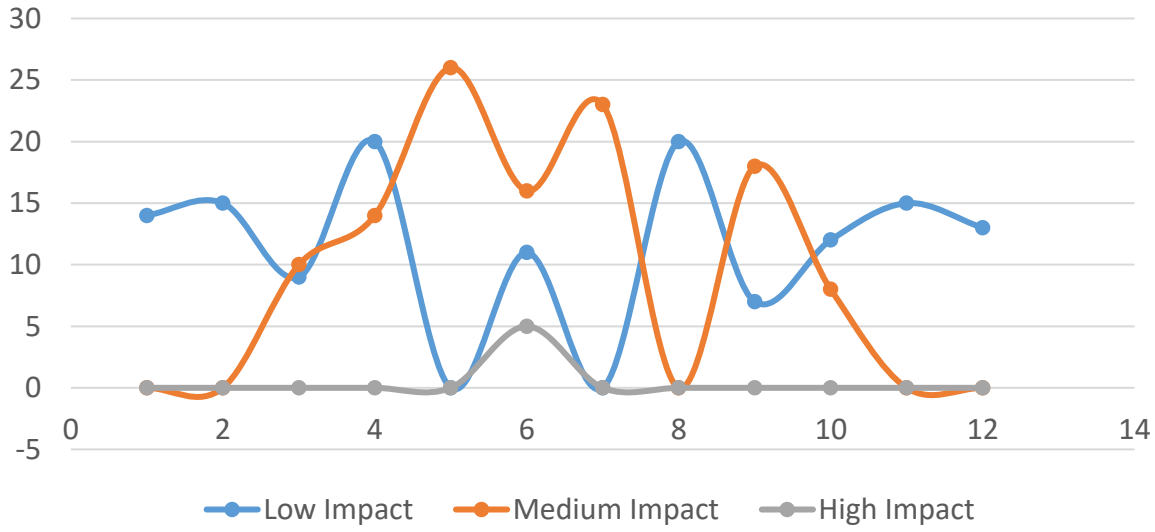


Figure 34 Attraction of Education indicator

Table show that the availability of any college and university in only 15.1 % and Small technical education institutes like short computer courses, English language courses, short duration diplomas are available in the study area are 23.5 %. This type of community can easily be attracted if the provisions of educational services can provide by giving importance to the affordability. These services attract more people from surrounding areas and make this development successful. Above radar chart which is made by the results of composite index shows the impact of education to attract the housing project in an area has a mix low and medium impact. There is a mild difference between low and medium. Overall impact of education factor is low.

Table 32 Attraction of health indicator

Sr.no	Indicators	Codes	Response	Frequency	Percentage	Means
1	Any Hospital in your village?	H1	Yes	71	28.3	1.72
			No	180	71.7	
2	Any private clinic in your village?	H2	Yes	171	68.1	1.32
			No	80	31.9	
3	Any Gynecological hospital in your village	H3	Yes	79	31.5	1.69
			No	172	68.5	
4	Dispensary in your village?	H4	Yes	174	69.3	1.31
			No	77	30.7	

4.13.5 Health

Health factors are used to identify the health needs and prioritizing them, evaluation of health services, planning and allocation of health resources and measure of health success (Choi, 2019).There is always lack of health facilities in rural areas like clinics, hospitals, laboratories, gynecological facilities and medical stores. New development with good health facilities can attract most of the rural people towards it (Nancy, 2019). Following table is showing the collected data and its frequency.

Results of composite index analysis are given below:

Table 33 Composite index of health

Selected Rural Areas	Low Impact	Medium Impact	Total
Chak 30 AC	14	0	14
Chak 30 AD	5	10	15
Kotha Kalan	19	0	19
Kanyat	18	16	34
Gurha	26	0	26
Kharakkan	12	15	27
Village Ghurbal	23	0	23
DhokDhumman	10	10	20
Pahrma	24	1	25
Maira Sharif	20	0	20
DhokBudha	12	3	15
Dhok Shahan	7	6	13
Total	190	61	251

Availability of hospitals is only 28.3 % remaining 71.7 % people said there is no quality hospital in their area. Private clinic are the source of good income and the areas like villages where no adequate health facilities available, people have to go to the private clinics that's why the ratio of private clinics is 68.1 % which is more than other health facilities. Gynecological facilities are also not much availability.

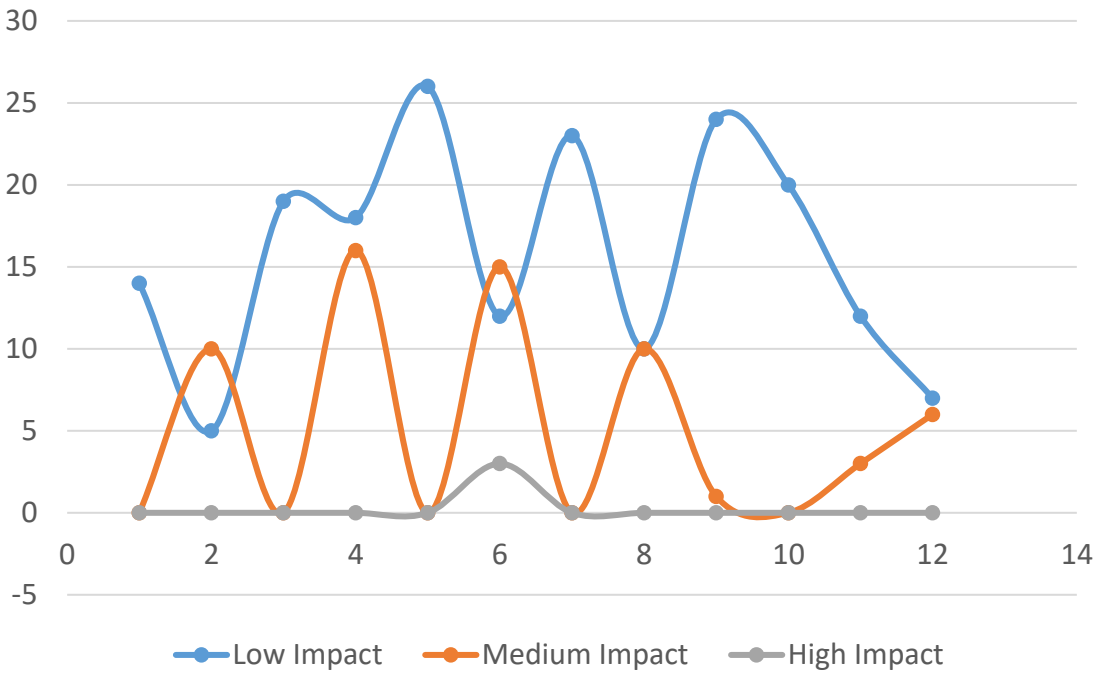


Figure 35 Attraction of Health indicator

According to 31.5 % people these facilities exist. Small dispensaries and medical store exist in those rural areas with the percentage of 69.3 but there is lack of advance medicines. Laboratories are also not much existing in those areas. It shows that if there is a new development along these rural areas there is much percentage of using the health facilities in new development but according to the affordability. The result shown in the radar chart is depicting that the factor health is attracting very low to the new development as compare to others.

4.14 Overall attraction factor

For any housing site searching and site selection is a major and most important element. Each housing project along with all real estate decisions, identification of location is very critical (Krisnaputri, 2016). Roads and public transport attract these housing projects because, availability of existing roads can provide good connectivity to surrounding and city center areas. Availability of public transport to serve the tenants, permanents residence, service providers to approach their desired destinations. Proximity to great public team

might be a prerequisite or give an upper hand to subsidizing applications. (housing, 2013). Many others factors are important in site selection criteria like scale of the project, housing and construction, location, Land acquisition, Zoning considerations and community acceptance. In this study the existence of roads and connectivity, availability of land, existing infrastructure of that area and economy, female community, educational institutes and health facilities of the housing scheme can attract the surrounding areas.

Table 34 Overall attraction factor

Attracting Factors	Low Impact	Medium Impact	High Impact
Roads and connectivity	4	110	137
Land	0	60	191
Existing facilities	222	29	0
Economy	62	189	0
Gender	233	18	0
Education	136	115	0
Health	190	61	0

Results of analysis show that the highest impact factors of attraction of mega housing projects are existing road network and connectivity, Availability of cheap land and largest chunks of land. It means presence of existing road network and availability of land both are the important factors than existing infrastructure, economy, female community, educational institutes and health facilities. While choosing the location of new housing projects these two factors should be prioritized.

Figure 36 Overall attraction factor

Chapter 5: Conclusion& Recommendation

From the study conducted, it can be concluded housing is one of the basic needs of human life. It is the significant part of social and physical environment and in developing countries housing backlog is a very important issue. This housing unit's deficiency is the biggest outcome of continued urbanization. It is estimated that almost 25 % to 33 % urban dwellers of developing countries are living in poverty and can't afford adequate housing. Due to rapid urbanization, it become a need to develop new housing projects. Lack of appropriate space for these housing projects it usually located at the urban fringe and also have a huge impact on surrounding area. Environmental impacts of the mega housing projects are Consumption of land, over extraction of gravel from river beds or ridges, Growth in CO2 emissions, growing consumption of water, Loss of natural habitats and biodiversity, Loss of best agricultural land, increase in soil erosion, increase in the use of water and fertilizer in less productive areas and increase in air pollution. Out of 251 respondents, 135 were from around developed housing scheme and 116 were from the surrounding areas of under developing housing scheme. The development status-based analysis was performed by applying Pearson's chi-square test on each indicator. The only factor in education category having significant difference in development-based perception of rural resident for availability of technical institute (X^2 = 121.66, p-value 0.000). With higher difference between develop and under developed. Remaining results of Utilization of the educational facilities, Time to travel to avail the educational facility, educational facilities helpful for village, increase in educational facilities, uplift the education level, Affordability of housing scheme's schools, Transportation provision, Village's teacher provides home tuitions in nearby housing schemes, home tutors from housing schemes to village and increase in confidence level of child shows that all indicators have significant difference between

developed and under developed areas. The significant factor highlighted in the results for health indicator are avail of ambulance service and satisfaction level of health facilities. There is a significant difference between developed and under developing regarding the availing of ambulance service of the nearby housing scheme (X^2 = 222.44, p-value 0.000), whereas the satisfaction level between developed and under developing is same (X^2 = 5.01, p-value 0.167) it shows that there is no significant difference. Market indicator with a huge significant difference between developed and under developing is level of benefits by these market facilities (X^2 = 63.22, p-value 0.000). However, the factors increase in food supply from village and demand of raw material have no significant difference among developed and under developing. Increase in food supply from village (X^2 = 6.53, p-value 0.088) and demand of raw material (X^2 = 5.23, p-value 0.073). Remaining factors Utilization of market facility, time to travel to avail market facilities, Market affordability, purchase of raw material from nearby housing scheme, increase in business and price difference have also significant difference among both categories. The higher significant difference is between leading roads from villages to housing schemes between developed and under developing (X^2 = 140.12, p-value 0.000). Remaining factors reduction in commuting cost (X^2 = 2.58, p-value 0.460), time to access the main road (X^2 = 3.66, p-value 0.160), trips per day in HS (X^2 = 4.12, p-value 0.127) and improvement in village's road infrastructure (X^2 = 5.16, p-value 0.160) have no significant difference between developed ad under developing, these have the same impacts. The only factor of social category having significant difference is social interaction between housing schemes and rural areas is (X^2 = 235.44, p-value 0.000). but three indicators labor starts to living in the village (X^2 = 7.72, p-value 0.102), slums settlements after the development of housing scheme (X^2 = 5.72, p-value 0.124) and improvement in life style (X^2 = 2.46, p-value 0.117) have no significant difference. These impacts are same on both categories. New developments have positive impact on economy.

High economic growth leads to higher tax revenue. The economic indicator increases in land price have a clear significant difference (X^2 = 93.72, p-value 0.000) it means increase in land price is different between developed and under developing. Increase in investment opportunity (X^2 = 5.40, p-value 0.067), increase in villages productivity (X^2 = 0.37, p-value 0.828) have no significant difference. These indicators have same impacts on both categories. Remaining factors like Housing scheme provides employment opportunities, increase in household expenditure, Provision of labor from village to HS, increase in local employment, increase in business opportunities have a (p-value < 0.05) shows the significant difference between developed and under developing. Data analysis shows water resources (X^2 = 16.52, p-value 0.001) have a significant difference between both selected variables. On the other hand, consumption of village's land (X^2 = 1.15, p-value 0.764), loss of any species and natural habitat (X^2 = 1.04, p-value 0.592) have no difference between the variables of developed and under developing. Remaining Cutting of trees, consumption of agricultural land, increase in air pollution having p value a (p-value < 0.05) shows that factors have significant different. That availing of gynecology facility of nearby housing scheme has a huge significant difference with (X^2 = 251.0, p-value 0.000). Other factors like girl started to going to schools of nearby housing schemes (X^2 = 0.89, p-value 0.827), Women started to get technical education (X^2 = 2.67, p-value 0.263), Women leaves agricultural activities (X^2 = 2.41, p-value 0.491) and cultural change (X^2 = 1.25, p-value 0.534) have a huge significant difference. Remaining factors women headed household, found employment in housing scheme, Runs Small business, provision of domestic services to housing scheme, Availability of gynecology having p value a (p-value < 0.05) shows that factors have significant difference between developed and under developing. Theoretically, this research will provide the baseline for indicator-based approach for future research on real estate and its impacts. Education, Health, Market, Social and environment indicator of

developed and under developing housing schemes having (p-value < 0.05) shows that factors have significant difference, it means both have different impact on surrounding rural areas. The impact of roads and connectivity, Environment and gender (p-value > 0.05) shows that factors have no significant difference between developed and under developing housing schemes it means that these three indicators of developed and under developing housing areas have same impacts on rural areas. Furthermore, application of advance statistical analysis techniques can provide a more precise depiction of impacts of these indicators on rural areas.

There are number of factors connectivity, land, Economy, Social, Educational, health, gender and existing facilities or existing infrastructure area attracting the growth of Mega Housing project near rural areas. To know the impacts of these attraction factors “Composite Index Method” is used. Results of analysis show that the highest impact factors of attraction of mega housing projects are existing road network and connectivity, Availability of cheap land and largest chunks of land. It means presence of existing road network and availability of land both are the important factors than existing infrastructure, economy, female community, educational institutes and health facilities. While choosing the location of new housing projects these two factors should be prioritized.

Recommendation

To recommend the strategies for regularize and control the growth of unplanned project in sub urban areas which can affects rural areas negatively, some experts interview like senior town planners and official are conducted and outcomes of these interviews in which these experts suggest some strategies are following:

- There is a need to revise the housing policy of Pakistan 2001. Because it is failed to cope with expectations and housing issues of Pakistan. Government and Ministry of Housing should develop a new guideline for the housing sector.
- Prices of new housing projects should be controlled and monitories. This practice can reduce the pressure on existing urban areas.
- Planning and design must be on human scale. There is a need to strengthen present land use growth pattern. Existing by-laws are failed and not capable to control unplanned growth. There is a need to fix by-laws and make it flexible and realistic.
- For bringing unplanned growth into legal framework there should be some fixed standards. By fulfilling standards unplanned growth can be managed.
- Ministry of housing should create separate by-laws of unplanned and illegal development.
- Issues of implementation of strategies should be addressed and there should be a strong and separate department for enforcement.
- If these housing projects would well plan and managed, they left a positive effect on rural areas where, the unplanned projects would have a negative effect on rural areas. Planning with smart growth is recommended.
- Concentrated development in order to protect areas with high natural value.

- Pakistan’s housing policy have flaws which creates the spatial and housing challenges.
- There is a need to understand the importance of compact development. Instead of these mega projects if investors and policy makers concentrate on compact development it can reduce all the negative.
- Growth management policies to preserve green land, existing crops and trees.
- Authorities should control the unplanned and illegal development.
- Growth boundaries to control such development.
- Encourage compact development which can significantly reduce the pollution only when it is complemented with growth control less vehicle use and technological emission control.
- Taxation and incentive-based techniques should be made and implemented. Tax system should be implemented if green land is going to be transferred for grey projects.
- Land acquisition techniques: land should be acquired in a legal manner and its fees should be paid.
- An Incentive should be given to those people who are conserving their green lands.

References

Ali, K., Shuaib, M., Malik, T., Shah, S., Ali, S., Shah, N., . . . Li, Z. (2019). Urban Sprawl and its Impact on Soil and PlantSpecies in Peshawar, Pakistan. Polish Journal of Environmental Studies,

Arnaiz-Schmitz, C., Schmitz, M. F., Herrero-Jauregui, C., Gutierrez-Angonese, J., Pineda, F. D., & Montes, C. (2018). Identifying socio-ecological networks in rural-urban gradients: Diagnosis of a changing cultural landscape. Sci Total Environ,

Chen, K., Long, H., Liao, L., Tu, S., & Li, T. (2020). Land use transitions and urban-rural integrated development: Theoretical framework and China's evidence. Land Use Policy, 92,

Dogan, E., & Stupar, A. (2017). The limits of growth: A case study of three mega-projects in Istanbul.

Dudzińska, M., Bacior, S., & Prus, B. (2018). Considering the level of socio-economic development of rural areas in the context of infrastructural and traditional consolidations in Poland. Land Use Policy,

Li, G., Jiang, C., Du, J., Jia, Y., & Bai, J. (2020). Spatial differentiation characteristics of internal ecological land structure in rural settlements and its response to natural and socio-economic conditions in the Central Plains, China. Sci Total Environ,

Li, G., & Li, F. (2019). Urban sprawl in China: Differences and socioeconomic drivers. Sci Total Environ,

Li, J., Qiu, R., Li, K., & Xu, W. (2018). Informal Land Development on the Urban Fringe. Sustainability,

Pereira, P., Monkevičius, A., & Siarova, H. (2014). Public Perception of Environmental, Social and Economic Impacts of Urban Sprawl in Vilnius. Societal Studies,

Pramono, R. W. D. (2018). Housing Development on the Urban Fringe and its Challenges to Sustainable Urban Growth. IOP Conference Series: Earth and Environmental Science,

Wilson, B., & Chakraborty, A. (2013). The Environmental Impacts of Sprawl: Emergent Themes from the Past Decade of Planning Research. Sustainability

Wu, J. (2008). Land Use Changes: Economic, Social,and Environmental Impacts. AAEA.

Walker,C.W.a.E.S.w.A.E.a.BUnderstanding_the_Local_Impact_of_New_Residential_Development. LSE London.

Patrick B. Cobbinah, a. C. A. (2014). <UrbanSprawlandtheLossofPeri-UrbanLandinKumasiGhana.pdf>. International Journal of Social and Human Sciences 6 2012.

Goix, R. L. (2006). Gated Communities and Social Segregation in Southern California. HAL archives-ouvertes.

Islam Ghonimi , H. A., Mohamed Khairy ,Mohamed Soilman. (2010). Understanding and formulating gated communities inside GCR new towns urban fabric. Ghonimi et al.

Arkkelin, D. (2014). Using SPSS to Understand Research and Data Analysis. ValpoScholar.

Dawani, A. S. a. K. (2015). Living Wage Report Urban and Rural Pakistan. International Standard Classifi cation of Occupations.

Singhal, R., & Rana, R. (2015). Chi-square test and its application in hypothesis testing. Journal of the Practice of Cardiovascular Sciences

Birch, J. (2015). HOUSING AND POVERTY. JRF.

Tarawneh, W. M. A. (2014). Urban Sprawl on Agricultural Land (Literature Survey of

Causes, Effects, Relationship with Land Use Planning and Environment) A Case Study from Jordan(Shihan Municipality Areas) Journal of Environment and Earth Science.

Abu Hatab, A., Cavinato, M. E. R., Lindemer, A., & Lagerkvist, C.-J. (2019). food security and agricultural systems in developing countries: A systematic review of the literature. Cities, 94, 129-142.

Ungureanu, N., Vlăduț, V., & Voicu, G. (2020). Water Scarcity and Wastewater Reuse in Crop Irrigation. Sustainability, 12(21).

Kapur, D. R. (2017). Employment Opportunities in Rural Areas. ValpoScholar.

Arbour, L. (2017). Migration and Its Impact on Cities. WEF.

Anil Menon, G. H., Hazem Galal, Jonathan Reckford, & Charles, A. (2019). Making Affordable Housing a Reality in Cities. Cities, Urban Development & Urban Services Platform In Collaboration with PwC.

Koellner, T., & Scholz, R. W. (2006). Assessment of land impacts on the natural environment. The International Journal of Life Cycle Assessment, 13(1), 32-48.

Osobajo, O. A., Otitoju, A., Otitoju, M. A., & Oke, A. (2020). The Impact of Energy Consumption and Economic Growth on Carbon Dioxide Emissions. Sustainability, 12(19).

Maestu, J. (2015). Implementing the water related Sustainable
Development Goals. The relevance of technology. Water Monographies WM, 2015 WM-III 104.

Coulibaly, B., & Li, S. (2020). Impact of Agricultural Land Loss on Rural Livelihoods in Peri-Urban Areas: Empirical Evidence from Sebougou, Mali. Land, 9(12).

Rehman, A., Chandio, A. A., Hussain, I., & Jingdong, L. (2019). Fertilizer consumption, water availability and credit distribution: Major factors affecting agricultural productivity in Pakistan. Journal of the Saudi Society of Agricultural Sciences, 18(3), 269-274.

Manisalidis, I., Stavropoulou, E., Stavropoulos, A., & Bezirtzoglou, E. (2020). Environmental and Health Impacts of Air Pollution: A Review. Front Public Health, 8, 14.

Streimikiene, D. (2015). Quality of Life and Housing. International Journal of Information and Education Technology, 5(2), 140-145.

Cattivelli, V. (2021). Planning peri-urban areas at regional level: The experience of Lombardy and Emilia-Romagna (Italy). Land Use Policy, 103.

IFC. (2021). Role of the Private Sector in Development multilateral and bilateral development finance institutions.

Anderson, R. E. H. a. W. D. (2011). Development at the Urban Fringe and Beyond: Impacts on Agriculture and RuralLand. Economic Research Service, 88.

Oleg Golubchikov, A. B. (2012). Sustainable Housing for Sustainable Cities: A Policy gfhhhFramework for Developing Countries. ResearchGate.

Organization, W. H. (2017). Urban green spaces: a brief for action. WHO, 24

Kanaley, B. R. a. T. (2016). Urbanization and Sustainability in Asia. Asian Development Bank, 516.

Feltynowski, M., , A. S., , J. B., , E. G.-K., , M., Dymitrow, & , S. Ś.-M. (2015). Some problems of local development: The example of former State Agricultural Farms in Poland. ResearchGate, 8.

Svedin, D. U. (2017). Urban Development and the Environmental Challenges

– “green” systems considerations. European Commission (Directorate General for Regional Policy), 43.

Rai, M. S. (2017). Impact of Urbanization on Environment. International Journal on Emerging Technologies, 56.

Kugelman, M. (2013). Urbanisation in Pakistan: causes and consequences. Norwegian peacebuilding resource centre, 7.

Crisp, R., Eadson, W., & While, A. (2016). Tackling poverty through housing and planning policy in city regions. Joseph Rowntree Foundation, 63.

Xing Quan Zhang, K. A. (2010). Housing as a Strategy for Poverty Reduction in Ghana. United Nations, UN-Habitat, 41.

D’SOUZA, R. (2019). Housing Poverty in Urban India: The Failures of Past and Current Strategies and the Need for a New Blueprint. OBSERVE RESEARCH FOUNDATION, 46.

Olympia Bover, J. F. J. (2017). House Prices and EmploymentReallocation: International Evidence Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor IZA DP No. 3129, 43.

Agnewa, K., & Lyons, a. R. C. (2013). The Impact of Employment on Housing Prices: Detailed Evidence from FDI in Ireland. JEL R10 R21 F23, 38.

NANCY E. ADLERa, b. A. J. M. O. (2019). Socioeconomic Status and Health: What We Know and What We Don’t. elsevier, 13.

Choi, J., Ki, M., Kwon, H. J., Park, B., Bae, S., Oh, C. M., Chun, B. C., Oh, G. J., Lee, Y. H., Lee, T. Y., Cheong, H. K., Choi, B. Y., Park, J. H., & Park, S. K. (2019). Health Indicators Related to Disease, Death, and Reproduction. J Prev Med Public Health, 52(1), 14-20.

Rogers, T. C. a. S. (2009). Why Use Social Indicators?Making the Case to MFIs and Other Stakeholders SEEP Network, 51.

Ismail, N. W., & Mahyideen, J. M. (2015). The Impact of Infrastructure on Trade and Economic Growth in Selected Economies in Asia. ADBI Working Paper Series, 33.

WYK, J. V. (2007). The impact of development on the environment as part and parcel ofintegrated development planning ResearchGate, 24.

Teo, H. C., Lechner, A. M., Walton, G. W., Chan, F. K. S., Cheshmehzangi, A., Tan-Mullins, M., Chan, H. K., Sternberg, T., & Campos-Arceiz, A. (2019). Environmental Impacts of Infrastructure Development under the Belt and Road Initiative. Environments, 6(6).

Bernd Hoffmann, D., Governance and Democracy Division, GTZ, Eschborn. (2016). Impacts on Gender Equality in Development Cooperation Interventions: Gender Markers in Technical and Financial Cooperation.

Tansel, A., & Güngör, N. D. (2012). Gender Effects of Education on Economic Development in Turkey. In (pp. 39).

Straka, J., & Tuzová, M. (2017). Factors Affecting Development of Rural Areas in the Czech Republic: a Literature Review. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 64(6), 2141-2150.

Pavel, A., & Moldovan, O. (2019). Determining Local Economic Development in the Rural Areas of Romania. Exploring the Role of Exogenous Factors. Sustainability, 11(1).

Greco, S., Ishizaka, A., Tasiou, M., & Torrisi, G. (2018). On the Methodological Framework of Composite Indices: A Review of the Issues of Weighting, Aggregation, and Robustness. Social Indicators Research, 141(1), 61-94.

Housing, C. Q. s. (2013). "Site Selection Criteria and Search Strategies for new housing schemes." Quality supportive housing: 17.

Hameed, G. A. A. a. R. (2007). "The Dynamics of Colonization of Peripheral Housing bbbSchemes and Policy Options in Case of Lahore." Elsevier: 7.

Dowall, D. E. E., Peter (2009). "Urban land and housing markets in the Punjab, Pakistan." NNzbw Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre for Economics.

TARIQ, D. F. (2017). "POLICIES TO PROMOTE AFFORDABLE HOUSING IN PAKISTAN:CHALLENGES AND LESSONS LEARNED." 31.

Dee Hardekar and Shay Chakraborty, G. S. and Dr. Matt Syal and Dr. Sinem Mollaoglu (2018). "ROLE OF INFRASTRUCTURE IN THE SUCCESS OF A RESIDENTIAL DEVELOPMENT." Housing Education and Research Initiative (HERI) Construction Management Program Michigan State University October 2018: 18.

Council, L. P. (2016). "Liss Village Neighbourhood Development Plan Making the plan: Residential Site Selection." the South Downs National Park Authority: 61.

Ding, D. W. a. Y. (2015). "Selecting Housing Development Sites using Multi-Criteria Decision Analysis (MCDA) : A Case Study of Guangzhou, China." 36.

Krisnaputri, N. A. (2016). "Site Selection Factors of Apartment on Developer Perspective." International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181: 8.

Joseph S. Rabianski, J. R. D. a. and N. G. Carn (2011). "Corporate Real Estate Site Selection: A Community - Specific Information Framework." 34.

Reeyyeess, G. E. (2011). "Factors effecting growth and development." Nómadas. Revista Crítica de Ciencias Sociales y Jurídicas: 4.

Sohail, M. (2014). "Women Empowerment and Economic Development-An Exploratory Study in Pakistan." Journal of Business Studies Quarterly · June 2014: 10.

ANNEXURE

ANNEXURE "A" QUESTIONNAIRE FOR "IMPACTS OF MEGA HOUSING PROJECTS ON RURAL AREA: A CASE STUDY OF RAWALPINDI AND ISLAMABAD".

Questionnaire for Survey

Housing is a major concern not only in Pakistan but all over the world because it is the basic need of human being. In Pakistan housing is the enigma and can be considered as a hardest problem to solve. Housing is not the basic need, it shows the quality of life and living standard. If housing considered in an investment way it promotes economic activities and employment opportunities. Mega housing projects are carried out with the aim of providing adequate housing facilities. Most of these projects are located on the city countryside or at urban fringe in the presence of main road or highway. The geographic location of the mega housing projects is influencing nearby rural areas directly and indirectly. Everything comes naturally with some impacts it can be positive, negative and both positive and negative. These housing mega projects brings a change in settlement patterns, landscape and land use of that area where these projects are located. This research is to assess the impacts of mega housing projects on rural areas.

The Questionnaire is designed for interviewing the people of rural areas. It will be helpful in completing MS research thesis on "IMPACTS OF MEGA HOUSING PROJECTS ON RURAL AREA: A CASE STUDY OF RAWALPINDI AND ISLAMABAD". This information will be kept anonymous and used only for study purposes. Your cooperation in this regard will be acknowledged and appreciated.

Questionnaire is divided into following sections

- RESPONDENT DETAILS
- SOCIO ECONOMIC QUESTIONS
- NEARBY HOUSING SOCIETY DETAILS
- INDICATOR BASED IMPACTS

DATE AND DAY	AREA
Interviewer Name:	Supervisor:

RESPONDENT DETAIL

1. Name of the respondent: _____
2. Location: _____
3. Education _____year.
4. What is your occupation?

☐ Farmer ☐ Wage worker

☐ Skilled worker ☐ Shop keeper

☐ Self-employed ☐ Government employee

☐ Unemployed

5. Monthly income _____Rupees

SOCIO ECINOMIC

6. Number of earning members: _____
7. Monthly expenditure on

☐ 8. Transportation _____ ☐ Health _____

☐ 9. Education _____ ☐ Household _____

10. Household size? _____
11. What is the type of the house?

☐ Hut ☐ Semi pucca

☐ Pucca ☐ Independent house

12. What is the tenure status?

☐ Owned ☐ Rented

☐ Supplied free by employer ☐ by relative or another person

13. What is the major Construction material of the roof?

☐ Thatch, straw or mud ☐ Wood, Planks

☐ Iron sheets ☐ Tiles

☐ Cement ☐ Others

14. What is the main source of water for your house?

- ☐ Private connection to pipeline
- ☐ public taps
- ☐ Bore-hole
- ☐ Wells
- ☐ Hand pumps
- ☐ Tanker truck
- ☐ Others

15. How long does it take to collect the drinking water from the main source?

_____

16. Do you face water scarcity after the development of nearby housing project?

- ☐ Yes
- ☐ No

17. Any drainage and sewerage issue you face after the development of nearby housing project?

- ☐ Yes
- ☐ No

18. Any change in water quality you feel after the development of nearby housing project?

- ☐ Yes
- ☐ No

19. Any other water related issue? _____

20. What is the main source of lighting in your dwelling?

- ☐ Electricity
- ☐ Solar system
- ☐ Gas lantern
- ☐ others

If electricity then

21. Do you face any electricity issue after the development of nearby housing project?

- ☐ Yes
- ☐ No

If yes then

22. Do you face any voltage issue after the development of nearby housing project?

- ☐ Yes
- ☐ No

23. Do you face any Load shedding issue after the development of nearby housing project?

- ☐ Yes
- ☐ No

24. Do you face any increase in electricity bills issue after the development of nearby housing project?

☐ Yes

☐ No

25. Any other electricity related issue? _____

26. What type of fuel do you use most often for cooking?

☐ Gas ☐ Firewood

☐ Biogas ☐ Saw dust

☐ Others

27. Does any member of your household own any agricultural land?

☐ Yes

☐ No

28. Has any member of this household been growing any crop?

☐ Yes

☐ No

29. Does any member of your household own nonagricultural land holdings that include built up structure?

☐ Yes

☐ No

30. What is the size of your village?

☐ 50 Acres70 Acres ☐

☐ 100 Acres ☐ More than 100 Acres

31. What is the population of your village? _____

32. What is the price of land per Marla in your village? _____

33. What is the main source of income of villagers?

☐ Farmer ☐ Wage worker

☐ Skilled worker ☐ Shop keeper

☐ Self-employed ☐ Government employee

☐ Unemployed

34. You have any main road near your village?

☐ Yes

☐ No

35. How much time does it take to access the main road? _____

36. Is main road easily accessible to you?

☐ Yes

☐ No

37. Any public transport is available?

☐ Yes

☐ No

If yes then

38. Is this Public transport is affordable for you?

☐ Yes

☐ No

39. What is your mean of transportation?

☐ Cycle ☐ Motorbike

☐ Auto rickshaw ☐ Tonga

☐ Car ☐ Others

40. Condition of roads and street in your village?

☐ Poor ☐ Normal

☐ Good

NEARBY HOUSING SCHEME DETAIL

41. Name of housing scheme near your village? _____

42. What is the year of start of this housing scheme? _____

43. What is the size of this housing scheme? _____

44. What is the development status of housing scheme?

45. Is there any mega project like industry or commercial hub in nearby housing scheme?

☐ Yes

☐ No

46. If yes than what is the mega project exist in the housing scheme?

_____

47. Have you given your land to this project?

☐ Yes

☐ No

If yes then

48. How much agricultural area is lost in the development of this project?

_____

49. Is this project effects your land price?

☐ Yes

☐ No

50. Do you want to emerge your property or land with this housing project?

☐ Yes

☐ No

If yes then what is the reason of the emergence? _____

If no then what is the reason of not emerging with this housing society?

_____

51. Do you feel any noise pollution?

☐ Yes

☐ No

52. If yes then which time you feel the noise more? _____

53. Do you want to move in that housing society?

☐ Yes

☐ No

If yes then why you want to move in that housing schemes? _____

INDICATORS BASED IMPACTS

For each question below, mark the answer to indicate the value of each indicator from very high to very low, where 1=very high, 2= high, 3= neutral, 4=low, 5= very low

Sr.#	Questions	Scale				
		1	2	3	4	5
EDUCATION						
1	How much you utilize the educational facilities in nearby housing society?					
2	How much far you have to travel to avail the educational facility?					
3	Are the educational facilities in the housing scheme is helpful for you and your village?					
4	Is it increase the educational facilities to your village?					
5	The educational facilities in housing scheme uplift the education level in your village?					
6	Is there any technical institute in the nearby housing scheme?					
7	The schools in the Housing scheme are affordable for you?					
8	Does these school provides transportation to your children?					
9	Is anyone in your village provide home tuition to the students of nearby Housing scheme?					
10	Home tutors comes in your village to teach your children from nearby housing scheme?					
11	Is confidence level of your child is increased due to studding with the kids those are living in that housing scheme?					
HEALTH						
1	How much you utilize the health facilities in housing society?					
2	How much these facilities are beneficial for you and your village?					
3	How much you have to travel to avail these facilities?					
4	How much these health facilities are affordable for you?					
5	How much are you satisfied from these health facilities?					
6	How much these facilities led grow the health facilities in your village?					
7	Do you prefer the health facility in nearby housing scheme over your village's health facilities?					
8	The doctor from the nearby housing schemes has their private clinic in your village?					
9	In case of some accident or any other health emergency do you prefer your village's health facility or you go to the emergency of the nearby housing scheme?					
10	Can you avail the ambulance service of the nearby housing scheme's hospital?					
11	How much this ambulance service is helpful for your village?					

MARKET						
1	How much you utilize the market facilities in nearby housing society?					
2	How much you have to travel to avail this facility?					
3	How much the markets are beneficial for you?					
4	The markets in the Housing scheme are affordable for you?					
5	How much these facilities increase the food supply from your village?					
6	How much the demand of raw material is increase?					
7	How much you purchase raw material from the market of nearby housing scheme?					
8	How much these markets increase your business?					
9	How much price difference in both markets?					
ROADS AND CONNECTIVITY						
1	How much the main road improves the connectivity of your village?					
2	How much these roads reduce your commuting cost?					
3	How much time does it take to access the main road?					
4	What is the condition of your village's road?					
5	How many trips you make per day in the housing scheme?					
6	How many business trips you make per day in the housing scheme?					
7	How many social trips you make per day in the housing scheme?					
8	How many leading roads from your village to the nearby housing scheme?					
9	Any Bus or other transport from that housing scheme to your village?					
10	How much your village road infrastructure is improved after the development of this nearby housing project?					
SOCIAL IMPACTS						
1	How much your social interaction is increased with the people of this housing scheme?					
2	Does this scheme increase the segregation of residential area in your village?					
3	How satisfied are you with being near of this housing scheme?					
4	How satisfied are you with the environment where you live?					
5	How much this housing scheme disturb your village privacy?					
6	How much labor start to living in your village?					
7	How much slums are come into existence after the development of this housing scheme?					
8	How many safety issues in your village arise after the development of this housing project?					
9	How much the crime rate increase in your village after the development of this housing project?					
10	How much your life style improved after the development of the nearby housing project?					
ECONOMICAL IMPACTS						
1	How much this housing scheme provides you employment opportunities?					
2	How much your household expenditure increase?					

3	**How much your village provide labor to this housing scheme?**					
4	How much your land price is increased?					
5	How much the investment opportunities increase in your village?					
6	How much local employment is increased?					
7	How much the productivity increase in your village improved after the development of the nearby housing project?					
8	How much business opportunities increase in your village improved after the development of the nearby housing project?					
	ENVIRONMENTAL IMPACTS					
1	How much this housing scheme consume your villager land?					
2	How much fruit trees were cut down in the development of this housing scheme?					
3	Species or any natural habitat loss in the development of this housing scheme?					
4	How much agricultural land is consumed by this housing scheme?					
5	How much the air pollution is increased?					
6	Any increase in the use of fertilizers?					
7	How much the noise pollution is increased?					
8	Available water resources are enough for your village?					
9	What is the water quality you use for the irrigation?					
	IMPACTS ON GENDER					
1	How many women headed household in our village?					
2	How many women found employment in nearby housing scheme?					
3	How many women rubs small business in your village?					
4	How much the productivity is increased in their small business due to in nearby housing scheme?					
5	How many girls starts going to school and college of your village in nearby housing scheme?					
6	How many women provides domestic services to the houses of nearby housing scheme?					
7	How many women starts to get technical education in your village?					
8	How many women leaves agricultural activities and start doing paid labor?					
9	How many cultural changes you observe in women after the development of nearby housing scheme?					
10	How much the gynecological facilities are available in your village?					
11	How much you avail the gynecological facilities of the nearby housing scheme?					
12	How many pregnancies care unit are in your village?					

54. Are there any charges to utilize the facilities of the nearby housing scheme?

☐ Yes

☐ No

55. Any security issue arises because of this housing society? _____

56. Is this project beneficial for you?

☐ Yes

☐ No

If yes then how it is beneficial to you? _____

If no then how it is not beneficial to you? _____

57. What is your opinion of this housing project nearby your village?

_____

58. Any other remarks? _____

Thanks for your time and cooperation

ANNEXURE "B"List of the Housing projects in the study area

Safari Villas-I	Safari Enclave II (Land Sub Division)
Safari Villas-II	Elite Reverie
Bostan Avenue Housing Project	Mumtaz City
Army Welfare Housing Scheme (DHA-1)	Top City
Khudadad City	Federation of Railway Employees and others cooperative Society
Eastridge Housing Scheme	CBR cooperative Society
Tarnol Housing Scheme	Bahria Town Phase- VIII (partially)
University Town Pvt. Ltd.	Bahria Paradise
Faisal Town	Commoner Sky Gardens Housing Scheme
Gandhara City	Taj Residencia
Capital Smart City	Airport Green Garden
Multi Gardens	Taj Residencia (Extension)
Foreign Office Employees Cooperative Housing Society	Pakistan Atomic Energy Employees Cooperative Housing Society
PIA Officers Co-operative Housing Society	PARC Cooperative Housing Scheme
Golden Jubilee Cooperative Housing Society	Bahria Town (phase –I, II, &III)
Kehkashan Town	Clifton Town

Up-Country Enclosure	Sanober City
Pakistan Employees Cooperative Society	Doctors Cooperative Housing Society
ABAD cooperative Housing Society	Judicial Employees Cooperative Housing Society
Municipal Corporation Housing Scheme (sector A & B)	Revenue Employees Cooperative Housing Authority
Gulshan-e- Fatima	Shifa Cooperative Housing Scheme
T&T Employees Cooperative Housing Society	Rawalpindi Railway Employees Cooperate Housing society
Fazaia Housing Scheme	Garden Villas
Koshar View Housing Project	Rabia Bungalows

ANNEXURE "C" List of 79 illegal Housing Schemes in RDA

National Police Foundation Cooperative Housing Society	Kings Town
Defense View	Safari Green House
Airport Town	Jinnah Town
Global Avenue Phase I	Airport Employees Co-operative Housing Society
Sardar Town	Gulshan-e-Ali
Ch. Orangzeb (Land Sub-Division)	Janjua Town III
Executive Homes	Janjua Town II
Executive Villas (Land Sub-Division)	Janjua Town I
Usman Block	Khayabn-e-Millat
Wazir Town (Jabbar Town)	Rasool Town
Raffi Block Bahria Town	National Town
Safari Homes & Khalid Block Bahria Town	Khyaban-e-Quaid
Garden City Bahria Town	T&T Housing Society
Sangar Town	OGDC Town
Zitoon City	Hamza Town
Mohafiz Garden	Samar Zar Villas (Land Sub-Division)
Sarat Enterprises (Sheraz City)	Waddya Homes
City Homes	Gulshan-e-Iqbal
A.M Town	Fazal Town (Phase-II)

Shabaz Villas	Gulberg Town
Taqwa Town	Lake Vista Residential (Rawal City)
Al- Karim Builders	Palm City
Al-Buraq Enclave (Land Sub-Division)	Jabbar City
Fatima Town	Executive Homes / Abad Pearl Villas
Safa Valley (Land Sub-Division)	French Housing Scheme
Merry Land City	Maryum Green City
Morgah Hills (Land Sub-Division)	Alfalah Homes
(Land Sub-Division) near T&T Housing Scheme	Paras Villas/ Raja Abid Homes
Bahria Town Scheme	Baber Homes/ Gulshan-e-Baber
Hasan Homes (Land Sub-Division)	Metro Homes
Saphire Valley Sub-Division	Gulraiz Housing Scheme
Abid Homes (Land Sub-Division)	Federation of Employees Cooperate Housing Scheme
Shahpur Town	Usman Black
Raja Nisar (Land Sub-Division)	Jublee Town
Khyaban-e- Quaid	Radio Colony

OGDC Employees Cooperative Housing Schemes	Lawyers Town/ Wakeel Colony
Khyaban-e-Milat	Addan Homes
Raja Qasim (Land Sub-Division)	Samar Zar housing project
Rawal Enclave	Akbar Villas (Land Sub-Division)

ANNEXURE "D" the impacts indicators of Study area like Roads, schools, Markets, Employment Opportunities, Hospital, Mosque and restaurant in the selected housing projects.

SR.NO.	HOUSING SOCIETIES	NEARTEST TOWN/ VILLAGE	DISTANCE FROM HS	ROADS	SCHOOL	HOSPITAL	MARKETS	RESTAURANTS	MOSQUES	JOB OPPORTUNITIES
DEVELOPED HOUSING SOCITIES										
1	DHA PHASE1	KOTHA KALAN	3.1 KM	GT ROAD, MAIN LINK ROAD, MORGAH DHA, LINK ROAD BAHRIA EXPY, EXPRESS HIGHWAY, JAPAN ROAD	ARMY PUBLIC SCHOOL, ROOTS SCHOOL SYSTEM, ALNOOR TUTORS ACADMEY, FOUNDATION UNIVERSITY COLLEGE OF NURSING, DHA ORCHARD	AVICENNA MEDICAL CENTRE, FOUNDATION UNIVERSITY COLLEGE OF DENTISTRY & HOSPITAL, INTEGRATIVE MEDICAL CENTER, HIJAMA MEDICATION CUPPING THERAPY	GREEN FRESH, DHA AVENUE MALL, COMMERCIAL PLAZA, SATRAY STUDIO, RIVER GARDEN CASH AND CARRY	BISMILLAH HOTEL, CHAI GHAZAL, BRUNETTE CAFÉ, KITCHEN CUISINE, JAMIL & SONS	SHAFI MASJID, SARFRAZ MASJID, MASJID DHOK ALLAH YAR, JAMIA MOSQUE, MASJID GULZAR	TRANSFER AND RECORD DIRECTORATE, PROPERTY OFFICES, PTCL EXCHANGE, DHAI SUBSTATION
2	DHA PHASE 2	CHAK 30AC CHAK 30 AD	4.5 KM 5 KM	ISLAMABAD EXPRESSWAY, Faisal Avenue, G-T Road, Kahuta Road	Freesky Institute of Aviation and Technology Islamabad, Army Public School, DHA-I ARMY PUBLIC SCHOOL, Geospatial Research and education Lab, DHA-I education System (Cambridge Stream)	Islamabad Diagnostic Centre, Basheeran Umar eye Hospital, Yusra General Hospital, DHA CLINIC AND Dental Care Center	Chenone Store DHA II, Al siraj Market, Imtiaz Super Market, Walayat Market, Defence Mall, Zamzama General,	Al Makkah Chiniot Pakwan, Zahoor Café, Chaudhry hardware and Electric Store, Subway, Café the KARAK, snack shack, Jacaranda Family Club, DHA Pizza Inn, Super-Hot & Spicy	Masjid Fazal Kareem, Jamia Naumani	Herbion Pvt. Ltd, Al-Siraj Market, TCS express Center, Amazon Mall, ST engineering Solution, Sika Pakistan (Pvt.), PTCL exchange DHA-2
3	BAHRIA TOWN PHASE VIII	Kharakkan Kanyat Gurha	3 KM 650 M 5.4 KM	EXPRESS WAY, BAHRIA EXPY, USWMAN GHANI AVE, UMER AVENUE	IELTS PREPRATION INSTITUTE, DR. ABDUL QADEER KHAN SCHOOL & COLLEGE, APPLE GROUP OF SCHOOL, FUTURE WORLD SCHOOL, LEADS SCHOOL SYSTEM, ROTS MILLENNIUM SCHOOL	DENTAL ART CLINIC, ISLAMABD DIAGNOSTIC CENTER INTEGRATED MEDICAL CENTER, SOCH PYSHOLOGICAL CLINIC, BEGUM AKHTAR RUKHSANA MEMORIAL WELFARE TRUST, BAHRIA INTERNATIONAL HOSPITAL	ZEMHEIGHHTS SHOPPING MALL, 7 ELEVEN CASH AND CARRY, LIFE PLUS PAPER STORE, ASCON BUSINESS CENTRE, CONTINENTAL TOWER, LIBERTY TOWER, SKYWARD TOWER, THE PEARL MALL & RESIDENCY	PIZZA SQUARE, PIZZA GHAR RESTAURANTS, Hot& spicy, ROOMAN HOTEL, GLORIA JEANS, RED ROCK, KALISTO, CAFÉ TRIESTE, OLIVER'S PIZZA, CHINA KHOKHA, BIG BITES, DHABA HOTEL, FOODICTED PIZZA & BURGER, CHEF RESTAU	JAMIA MASJID ROSE GARDEN, RAFI MASJID	RESTAURANTS, MALLS, SCHOOLS, SHOPS, SCHOOL, HOSPITAL

								RANT, SHRINWALA SWEET AND BAKERS, , 7 STAR CAFÉ		
UNDER DEVELOPING										
4	MUMTAZ CITY	VILLAGE GHURBAL DHOK DHUMMAN PAHRMA	4.7 KM 2.2 KM 3.7 KM	RAWALPINDI JAND MIANWALI ROAD, M1, SIRINAGAR HIGHWAY, LINK ROAD			ARENA MAL & RESIDENCY, MARK ARCADE, BMIT CORNER, MM ARCADE, AG TOWER, SKYLITE ARCADE, ZAM ZAM 2	FRIENDS CAFÉ, SHALIMAR ARCADE		
5	CAPITAL SMART CITY	DHOK Shahan DHOK Budha Maira Sharif	7 KM 8 KM 8.5 KM	CHAKRI ROAD, CHAHAN ROAD, LAHORE ISLAMABAD MOTORWAY					JAMIA MOSQUE	