Comparative Analysis and Evaluation of NSP through Emerging Technologies: A Methodological Framework

MCS

by

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Thesis Acceptance Certificate

Certified that final copy of MS Thesis written by **Imran Hameed Qureshi**, Registration No. **00000363160**, of **Military College of Signals** has been vetted by undersigned, found complete in all respects as per NUST Statutes/Regulations/MS Policy, is free of plagiarism, errors, and mistakes and is accepted as partial fulfillment for award of MS degree. It is further certified that necessary amendments as pointed out by GEC members and local evaluators of the scholar have also been incorporated in the said thesis.

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Name of Supervisor   **Dr. Imran Rashid**

Date: _____

Signature (HOD): _____

Date: _____

Signature (Dean/Principal) _____

Date: _____

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Declaration

I hereby declare that no section of work included in this thesis presented for another award or qualification at this either organization or elsewhere

Dedication

"In the name of Allah, the most Beneficent, the most Merciful"

I dedicate the thesis to my family, and teachers who supported me throughout my effort.

Acknowledgments

I am thankful Allah for the guidance and His blessing in finishing my thesis.

I would like to convey my gratitude to my supervisor, Dr. Imran Rashid for his supervision and constant support. His invaluable help of constructive comments and suggestions throughout the experimental and thesis works are major contributions to the success of this research. Also, I would thank my committee members; Dr. Muhammad Haroon Saddique, and Dr. Humayun Zubair Khan for their support and knowledge regarding this topic.

At the end, I am highly thankful to my parents and better half. They have always stood by my visions and goals and have been a great source of motivation for me. I would like to acknowledge them for all their love, support and care through my times of enthusiasm and stress.

Abstract

The concept of national security remains ambiguous, having evolved from simpler definitions, which emphasized freedom from military threat and from political coercion, to encompass non-military concern such as energy security, environmental security, and even health, women's, and food security. Hence, there is need to evaluate various dimensions of National security under technological innovations in digital world taking into account threat landscape. Moreover, technological framework need to be defined to synergies National effort among various organ of National Power.

In order to produce transparent and reproducible answer for technological impact on National Security, comparative analysis of National Security Strategy (NSS) of Pakistan, India, UK, USA, China and Russia carried out, Systematic Literature Review of books, papers, and articles from 2012-2023 on NSS done through structured research to identify various dimension of NSS and technological impact on these dimensions. Basing on the extracted information, National Security Policy of Pakistan analyzed to identify gaps and suggested methodology to synergies effort among various organ of National Power.

My thesis shows that NSS encompasses both traditional and non-traditional security. Transitional security includes Military, Internal, Foreign/ Border, Space securities and non-traditional incorporates Economy, Human, Energy, Heath/ Food and Environmental securities. Digitization and advancement in science has impact on all dimension of NSS for formulation of Policy, Legal Framework, Technical, Organizational, Capacity Building and Cooperation. Cyber Security can address technological impact on traditional and non-traditional security. Hence, exclusive section for cybersecurity is imperative in NSP of Pakistan and thereafter National Technological Framework is required to Synergies National Security efforts among various National Powers.

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Introduction

1.1 Overview

National Security Policy provides guidelines for a country to address security needs of the people and the state by incorporating the views of the Government and other institutions. In Pakistan, policy formulation and implementation at organizational and departmental level remained a continuous process; however, a combined, national security policy, encompassing all elements of national power, remained a missing link. In this background, the preparation and issuance of Pakistan's first National Security Policy on 14 January 2022 was a huge milestone.

The new document has given a clear and bold vision for the future by emphasizing a geo-economic paradigm to policy that supplements Pakistan's geo-strategic approach. The policy is unique in that it introduces the concept of comprehensive national security by taking a citizen centric approach towards national security while keeping economic security at the core to strengthen defence and human security.

National Security is ever changing with advancement of technology and scarcity of natural resources. Technology has taken warfare from land to space and physical to cognitive domain. Scarcity of resources has taken into account economic, food, health, energy etc into National Security. Hence, there is need to evaluate various dimensions of National security under technological innovations in digital world taking into account of threat landscape. Moreover, define technological framework to synergies National effort among various organ of National Power.

1.2 Motivation

National security evolving from simpler definitions, which emphasized freedom from military threat and from political coercion to encompass non-military concern. Striking

balance between military and non-military concern to NSP demands in-depth analysis of various dimensions of security.

Security is not an ontological given, but a fluid political construction whose meaning changes across time and space. Moreover, relationship of security in relation to sovereignty and identity changes in Critical Security and Realism. Ever changing international political situation and advancement in technology stresses intellectual discussion on NSP.

1.3   Problem Statement

The concept of national security remains ambiguous, having evolved from simpler definitions, which emphasized freedom from military threat and from political coercion, to encompass non-military concern such as energy security, environmental security, and even health, women's, and food security. Hence, periodic review of NSS is required especially in the fast changing threat landscape and technological advancement.

1.4   Objectives

The main objectives of thesis are:-

- Identify various dimension of NSS.
- Threat landscape for NSS.
- Impact of technology on identified dimension of NSP.
- Identify indicators for monitoring implementation.
- Suggest methodological framework for synergizing interministerial/ departmental functionality.

Systematic Literature Review (SLR)

2.1   Definition

SLRs are a way of synthesizing scientific evidence to answer a particular research question in a way that is transparent and reproducible, while seeking to include all published evidence on the topic and appraising the quality of this evidence. The main objective of the SR approach is to reduce the risk for bias and to increase transparency at every stage of the review process by relying on explicit, systematic methods to reduce bias in the selection and inclusion of studies, to appraise the quality of the included studies, and to summarize them objectively [1].

2.2   Methodology Adopted for SLR

Formulation of Structured Review: National security is not ontological given but a fluid political construction; meaning changes across time and space. Moreover, relationship of security in relation to sovereignty and identity changes in Critical Security and Realism. In order to focus in the vast field and to keep the review of literature directional and objective, structured review was formulated through defined area of research in:-

- NSS Process
- Dimension of National Security
- Technological impact on Dimension of National Security
- Threat Landscape

2.3   Defining Literature Selection Criteria

Literature selected basing on formulated structured. Topic have relevance to the given criteria were selected and remaining were discarded.

2.3.1 Locate Studies

Literature gathered through web surfing on Google Scholar from 2012-2023 basing on defined questionnaire. Research included news, articles, papers, book and NSS of neighboring as well as developed countries.

1. **Access Study Quality:** Multiple papers and NSS compared to develop agreement / consensus.

2. **NSS Process**: Academic model studied for NSS process and the same was then map with US, Chinese, Turkish, India and Pakistan NSS.

3. **Dimension of NSS**: NSS of countries, book and papers were reviewed to define various dimension of NSS as follows:-

    - NSS of Pakistan, India, China, UK, USA and Russia.
    - National Security: Imperatives And Challenges, Paleri, Prabhakaran, 2008.
    - What Is National Security? Kim R. Holmes, 2015.
    - Cyber Power and National Security, Franklin D. Kramer, H. Starr, & Larry.
    - Elements of National Security Strategy, Malia DuMont, 2019.
    - **FACT SHEET**: The Biden-□Harris Administration's NSS, The White House, 20.
    - Elements of National Security, Abid Hussain, 2022.
    - Comprehensive National Security: Contemporary Discourse, Ehsan Mehmood, 2022.
    - Change and its Reflection in NSS and Force Structure, Stanley B. Weeks.

2.3.2 Critical Analysis of NSP

Biasing on literature review, NSP critical analyzed to give recommendations.

NSS Process

3.1 Academia Model

NSS formulation is deliberate process involving all stakeholders. Input from departments, political parties and intellectuals at tier 1 is coordinated by coordinating body at tier 2 and finally NSS is issued by Country's Chief Executive through Advisory Body. Academia model is as follow:-
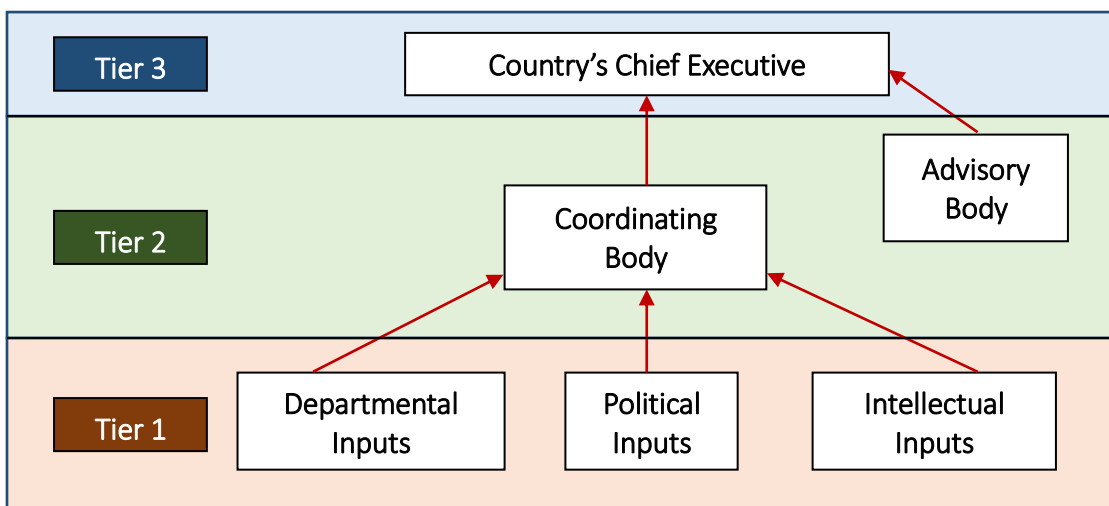
Figure 1 Academia Model - NSS Process

3.2 Pakistan Model

NSP development process started in 2014 and after extensive consultations of about 8 years, the policy issued with a buy-in from all stakeholders, specialists and even with university students which is likely to ensure sustainability of its recommendations. Mapping with academia model as follows:-

- **Tier 1**: President/ Prime Minister with advisor in National Security Committee.
- **Tier 2**: Defence Committee of Cabinet (DCC).
- **Tier 3**: Departmental input (Ministries, Military, Military Intelligence, ISI and IB), Political input (Senate, National Assembly, Sepecil Committees) and

Intellectual Input (Study centers, NDU/ Think Tanks, Media and Renowned Scholars).
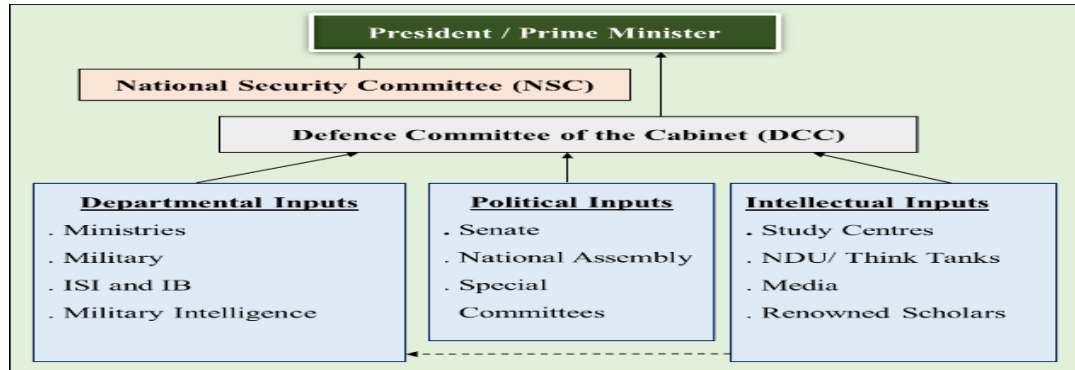
Figure 2 Pakistan Model- NSS Process

3.3   Indian Model

Indian cabinet committee on security coordinated input from government departments, political and intellectual for formulation of NSS and finally issued by Prime Minister. Mapping with academia model as follows:-

- **Tier 1**: Prime Minister.
- **Tier 2**: Cabinet Committee on security.
- **Tier 3**: Departmental input (Ministries, Defence services, RAW and IB, Defence intelligence agencies), Political input (Lok Sabha, Rajia Sabha, Special Committees) and Intellectual Input (National Security Advisory Board, Study Centers).
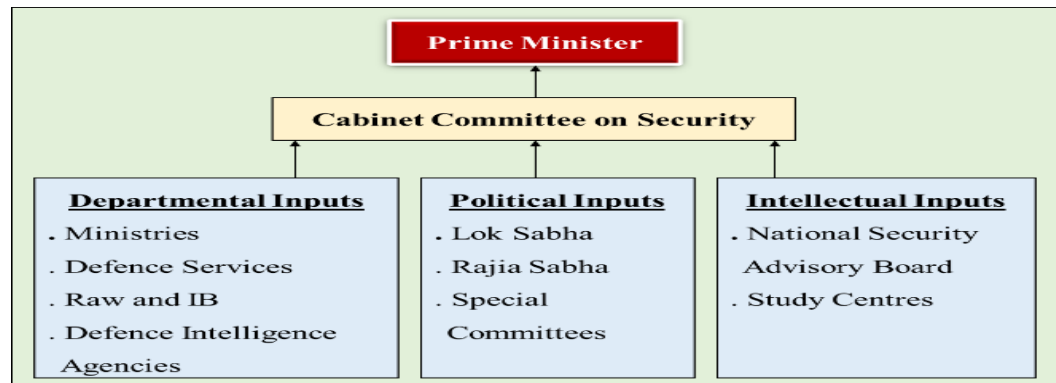
Figure 3 Indian Model - NSS Process

3.4   Turkish Model

National cabinet council coordinated input from government departments, political and intellectual for formulation of NSS and finally issued by President. Mapping with academia model as follows:-

- **Tier 1**: President.
- **Tier 2**: National Security Council.
- **Tier 3**: Departmental input (Ministries, General Staff HQ, National Intelligence Organizations), Cabinet for Political input (Parliament committees) and Intellectual Input (Institute of Strategic Studies and Media).
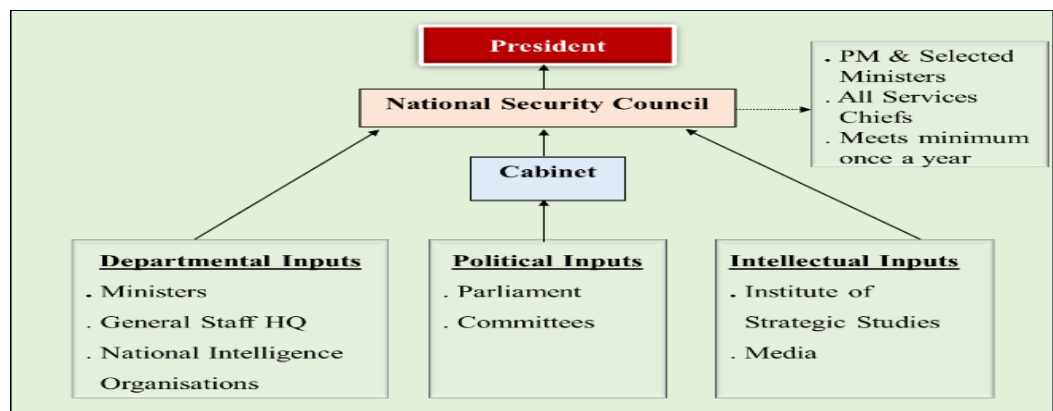
Figure 4 Turkish Model - NSS Process

3.5   Chinese Model

National Security Council coordinated input from government departments, political and intellectual for formulation of NSS and finally issued by President Chairman. Mapping with academia model as follows:-

- **Tier 1**: President Chairman.
- **Tier 2**: National Security Council and Prime Minister.
- **Tier 3**: Departmental input (Central Military Commission, Foreign Office, Oter Misitries), Political input (National Congress, Communist Party, Other Parties) and Intellectual Input (Think Tanks, Special Bodies).
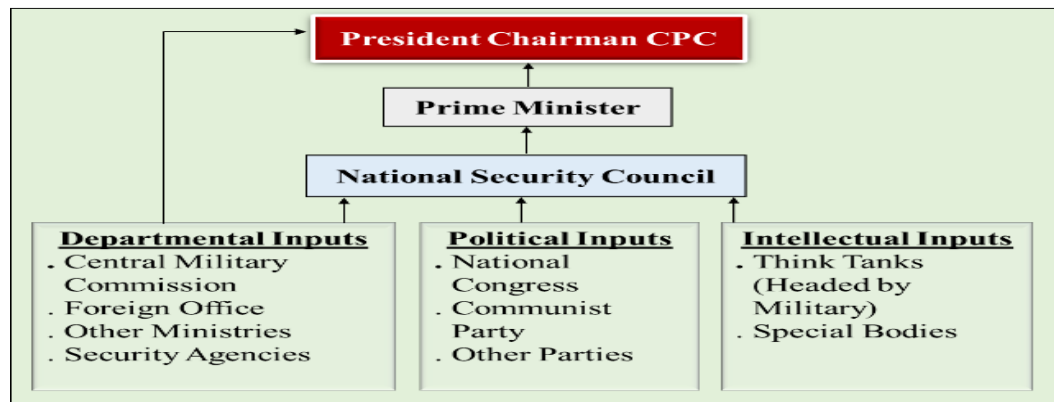
Figure 5 Chinese Model - NSS Process

3.6 US Model

National Security Council coordinated input from government departments, political and intellectual for formulation of NSS and finally issued by President. Mapping with academia model as follows:-

- **Tier 1**: President.
- **Tier 2**: National Security Council.
- **Tier 3**: Departmental input (State Departments, Pentagon, CIA and Other Departments), Political input (Secretaries, Congress, Political Bodies) and Intellectual Input (Think Tanks, Media and Special Projects).
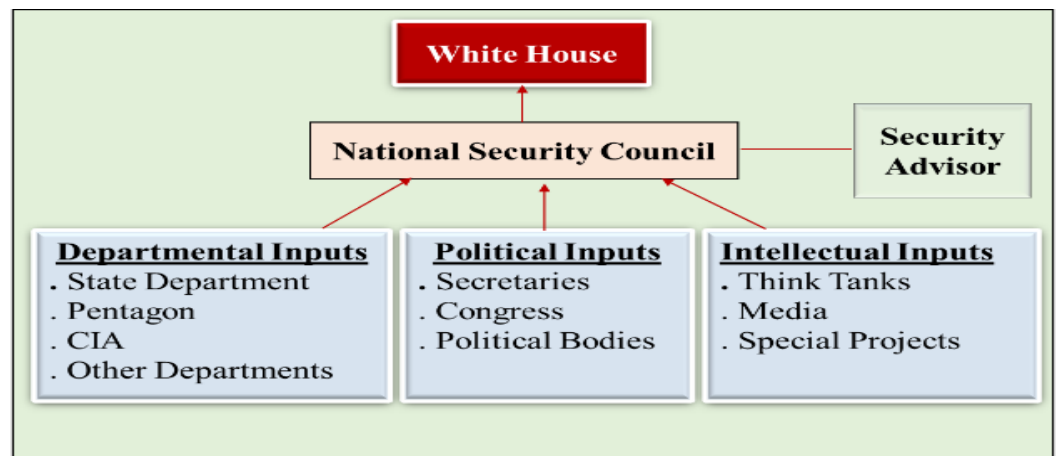
Figure 6 US Model - NSS Process

Comparative Analysis

4.1   NSP of Pakistan [2]

National Security Advisor Moeed Yousaf produced Pakistan first National Security Policy of 48 pages in 2022. The salient of documents is as follows:-

- The document formulated by National Security Division and released in 2022 after a colossal effort of eight years.

- The policy has eight sections and placed economy at its core. Target audience of the NSP are internal.

- Core of National Security is citizen and National Cohesion based on Ideology and Culture.

- Focus of policy and strategy is geo-economics and main drivers identified for prosperity are citizen and economy.

- Main security challenges and conventional military threat is from India.

- Internal disturbance defined in general whereas dealing with transnational terrorism did not address.

- Nontraditional security concerns to include water, climate and energy covered to limited scale.

- Relationship with neighborhood defined as friendly less with India, which are dependent on Kash.

4.2   Indian NSS [3]

India, till to-date, does not have a published, government approved national security policy. A National Security Strategy document published in Mar 2019, as an initiative of The Indian National Congress and prepared by Lt Gen D.S Hooda (Retd), is available online. The salient of documents is as follows:-

- The document formulated by The Indian National Congress and released in 2019.

- The policy has five parts and placed citizen at its core. Target audience of the NSP are global.

- Core of National Security is citizen and National Cohesion based on Diversity and Culture.

- Focus of policy and strategy is geo position and main drivers identified for prosperity is economy.

- Main security challenges and conventional military threat is from China.

- Internal disturbance covered in specific issues whereas framework suggested for dealing with transnational terrorism.

- Nontraditional security concerns to include immigration, water, climate and energy covered.

- Relationship with neighborhood defined as friendly to all and conditional with Pakistan.

4.3   China NSS [4]

China Ministry of National defense issued its National Security Strategy in 2019. Salient of strategy are as follows:-

- The document formulated by Ministry of National Defense and released in 2019.

- The policy has seven sections and placed Citizens & Territorial integrity at its core. Target audience of the NSP are internal.

- Core of National Security is citizen and National Cohesion based on National rejuvenation.

- Focus of policy and strategy is peaceful global partnership and main drivers identified for prosperity are Social stability and security, Independent economy.

- Main security challenges and conventional military threat is from Separatist movements (Taiwan independence and Tibet independence).

- Internal disturbance defined specific issues whereas dealing with transnational terrorism did not address.

- Nontraditional security concerns to include water, climate and energy not covered.

- Relationship with neighborhood defined as friendly with all.

4.4 USA NSS [5]

US National Security Strategy. The United States National Security Strategy was published in December 2017 by the Trump Administration. The document has four pillars and one portion dealing with strategy. The analysis of US Document:-

- The document released after a short gap of only 2 years, indicating less preparation time for an available structured strategies/ policy.

- The document focused inwards, celebrated as being an 'America First National Security Strategy'.

- Protection of the American peoples, the homeland, and the American way of life called a fundamental responsibility.

- Core principles are enshrined in American declaration of independence and fundamental individual liberties declared.

- Border security and immigration given top priority.

- Whereas importance of alliances was downgraded.

- As compared to the previous strategy, focus shifted from global issues like climate change, health etc.

- Despite all internal related aspects and its focus, being a super power, the document still had an international context and a global audience.

- The document talks about superiority of American research and technology, invention and innovation and its competitive edge.

- The document shows concern about American proprietary rights and attempts to steal the same.

- China and Russia are identified as main challengers to US power, influence and interests.

- China is declared as the main military and economic competitor and threat, trying to displace US in the Indo-pacific region. The infrastructure investment

and trade strategies of China in her neighbourhood are considered as directed towards geo-political dominance.

- The document views Pakistan role from the prism of Afghanistan and transnational terrorism with Pak-US relations tied to counter terrorism cooperation. Reference of Pakistan's nuclear assets is also given.

- For India, the document is open and welcoming, appreciating India's emergence as a leading global power and with hopes of stronger strategic and defense partner. Shows supports for a leading role by India in the Indian Ocean Region.

4.5 Russia NSS [6]

Review of National Security Strategy issued in 2015. Salient of strategy are as follows:-

- The document released in 2015.

- The policy has eight sections and placed Citizens & Strategic Stability at its core. Target audience of the NSP are internal.

- Core of National Security is Citizens & Strategic Stability and National Cohesion based on Cultural sovereignty.

- Focus of policy and strategy is internal unity and main drivers identified for prosperity are Citizens, Economy, Defense sector, Technological development, Environmental management.

- Main security challenges and conventional military threat is from The West (US and its allies), Transnational organizations.

- Internal disturbance defined whereas Terrorists to be pursued set to deal with transnational terrorism.

- Nontraditional security concerns to include water, climate and energy not covered.

- Relationship with neighborhood defined as Friendly with all; conditional with US and its allies.

4.6 Comparison of NSS

A detailed comparison shown in the table.

Factors	Pak	India	China	UK	USA	Russia
Document Type	Policy	Strategy	Policy	Strategy	Strategy	Strategy
Official	Yes	No (Draft)	Yes	Yes	No (Interim)	No (Document review)
Formulation	NSD	-	Ministry of National defense	National Security Council	Department of Defence	-
Year of Issue	2022	-	2019	2015	2017	2015
Contents	8 Sections	5 Parts	7 sections	5 parts	4 Pillars; One Strategy	8 sections
Target Audience	Internal	External	Internal	Internal	Global	Internal
Core for National Security	Citizens	Citizens	Citizens, Territorial integrity	Citizens, Global partnerships, strengthen defense system	Border Control & Immigration; Free Access to the Seas	Citizens, strategic stability

National Cohesion	Ideology & Culture	Diversity & Culture	National rejuvenation	Tradition and values	Constitution and Values	Cultural sovereignty
Focus of Policy/ Strategy	Geo-economics	Global Position	Peaceful global partnership	Global influence	Development Access	Internal unity
Main Drivers Identified for Prosperity	Citizens and Economy	Economy	Social stability and security, Independent economy	Citizens, Economy and Defense sector	Economy; Research & Technology; Energy Dominance	Citizens, Economy, Defense sector, Technological development, Environmental management

Main Security Challenge	India	China	Separatist movements (Taiwan independence and Tibet independence)	Northern Ireland and Syria	Revisionist Powers (China & Russia); Rogue States (Iran & North Korea); Transnational Terrorist Organisations	The West (US and its allies), Transnational organizations
Conventional Military Threat	India	Collusive	None	Syria	China	USA
Internal Disturbances	Yes, generalized	Specific issues covered	Yes, specific issue covered	No	No	Yes
Dealing with Transnational Terrorism	No	Framework suggested	No	Terrorists to be pursued	Terrorists to be pursued	Terrorists to be pursued
Immigration Issue	Not Covered	Covered	Not Covered	covered	Covered	Not covered

Climate Change & Water Security	Covered	Covered	Not Covered	covered	Not Covered	Covered
Relations with Neighborhood	Friendly with all; conditional with India (Kashmir)	Friendly with all; conditional with Pak (Terrorism)	Friendly with all	Global Relations	Global Relations	Friendly with all; conditional with US and its allies
Nuclear Forces	Not Covered	Covered	Covered	Covered	Covered	Not covered
Gender Inequality	Identified	Not Identified	Not Identified	Not identified	Not Identified	Not identified

Table 1 Comparison of NSS

<div align="right">

Chapter 5

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Dimension of NSS

5.1   Definitions

- **Military Security:** Ability to protect national sovereignty and territorial integrity through kinetic strength of force.

- **Foreign and Border Security:** Protecting from the illegal movement of weapons, drugs, contraband, and people, while promoting lawful entry and exit.

- **Internal Security:** The act of keeping peace within the borders of a sovereign state, generally by upholding the national law and defending against internal security threats.

- **Economic Security**: States' capacity to protect its economic freedom from external threats and coercion.

- **Energy and Natural Resources Security:** Uninterrupted availability of energy and natural resources at an affordable price

- **Health and Food Security:** Having access to enough food for an active, healthy life.

- **Cybersecurity:** Protection of Govt and citizen from manipulation of digital infrastructure from harmful system.

- **Human Security**: Protection of social and economic domain from violence.

- **Environmental Security**: Protection of energy/ water shortage and climatic changes from responses of conflict.

5.2   Dimension of NSS - Intellectual Defined

Author	Title	Military Security	Economic Security	Foreign Border Security	Internal Security	Human Security	Energy Security	Health Food Security	Envmtal Security	Risk Assessment
(Paleri, Prabhakaran, 2008) [7]	National Security: Imperatives And Challenges	✓	✓	✓	✓	✓	✓	✓	✓	
(Kim R. Holmes, 2015) [8]	What Is National Security?	✓	✓	✓	✓	✓	✓	✓	✓	✓
(Franklin D. Kramer, H. Starr, & Larry) [9]	Cyber Power and National Security	✓	✓	✓	✓	✓				
(Malia DuMont, 2019) [10]	Elements of National Security Strategy	✓	✓	✓	✓					✓
(The White House, 2022) [11]	FACT SHEET: The Biden-Harris Administration's NSS	✓	✓	✓	✓	✓	✓			
(Abid Hussain, 2022) [12]	Elements of National Security	✓	✓	✓	✓	✓	✓	✓	✓	

(Ehsan Mehmood, 2022) [13]	Comprehensive National Security: Contemporary Discourse	✓	✓	✓	✓	✓	✓			✓
(Stanley B. Weeks) [14]	Change and its Reflection in NSS and Force Structure	✓	✓	✓	✓					

Table 2 Dimension of NSS - Intellectual Defined

5.3 Dimension of NSS – Contemporary Policies

Country	Title	Global Security	Military Security	Economic Security	Foreign Policy Security	Internal Security	Human Security	Energy Security	Security	Envmtal Security	Cyber Security	Space Security	Risk Assessment
Pakistan	National Security Policy, November 2022		✓	✓	✓	✓	✓	✓		✓			
India	National Security Strategy, March 2019	✓	✓	✓	✓	✓		✓		✓	✓	✓	
China	National Defense in the New Era 2019	✓	✓		✓	✓					✓		

Country	Document												
UK	National Security Strategy and Strategic Defence and Security Review 2015	✓	✓	✓	✓	✓	✓				✓		✓
USA	National Security Strategy of the USA 2017	✓	✓	✓	✓		✓	✓	✓		✓	✓	
Russia	Russian National Security Strategy 2021	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	

Table 3 Dimension of NSS - Contemporary NSS

Technological Impact on National Security

6.1   Global Security : State Sponsored Cyberattacks

Cybersecurity is effecting countries beyond border sponsored by state. State sponsored cyberattack are happening right now, as news published in cyber news on 28 Sep 21 [15]. Australian IT infrastructure came under sustained cyberattack through "copy-paste compromised" via exploitation of a deserialization vulnerability in Microsoft Internet Information Services (IIS), a 2019 SharePoint vulnerability and the 2019 Citrix vulnerability on 18 Jun 21. The attack is pointed to sophisticated state-based actor.

6.1.1 Global Black Byte Ransomware Gange

Cybercriminal and state sponsored actors are using new method to compromise IT globally and one of the technique being used is 'Bring your own vulnerable driver' attack as published in cyber news on 19 Jan 2023. [16]

6.2   Military Security : US Military Tech Smuggling

US released indictment against seven persons who are accused of smuggling export controlled and military ammunition out of US for Russia on 14 Dec 22 [17]

6.2.1 Cyberattack on Iranian Nuclear Facility

 Cyber worm dubbed 'Stuxnet' injected to air gapped nuclear facility of Iran at Natanz in June 2010 using USB that struck the Iranian nuclear facility. [18]

6.2.2 Spied to Pakistan Civil Military Leadership

NSA spied on Pakistan civil-military leadership through National Telecommunication Cooperation in August 2016. [19]

6.2.3 Cyber Attacks on Ukraine

Russia's has launched many cyberattack in coordination with kinetic attack during invasion of Ukraine through phishing and DDoxS. Various cybersecurity provider has reported a noteworthy increase in cyber-attack. In US, Orca Security notified over average 60% increase in brute force attacks in SSH per user on cloud infrastructure.. [20]
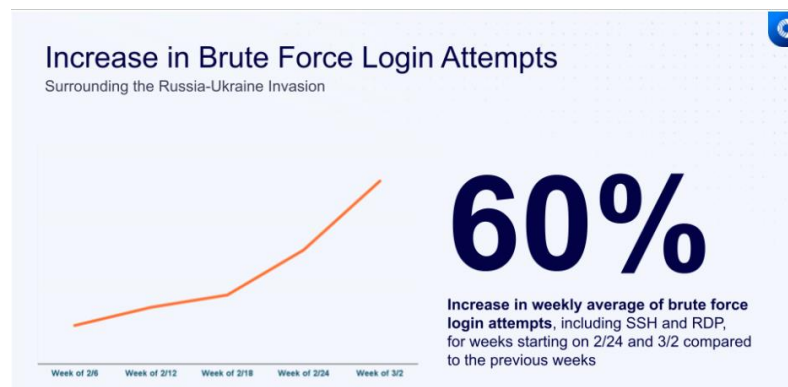
6.3   Economic Growth: Cyberattack on Spanish Delivery Company Glovo

Spanish household delivery company Glovo hit by hacker in 29 Apr 2021 through an old administrator platform. The company is operating over 20 countries and managing its 10 million customer's data.. [21]

Figure 8 Cyberattack on Spanish Delivery Company Glovo

6.3.1 Ransomware Attack on State Life

Ary news reported ransomware attack on state life of Pakistan on 19 May 2017 [22]. Global ransomware virus infiltrated number of computer.

6.4   Foreign and Border Security : New Dark Pink APT Group

New cybercriminal group has emerged which has hit government and military in Asia-Pacific with advanced persistent threat, which include religious group in Vietnam, Philippines and Malaysia militaries, government departments in Cambodia, Indonesia, and Bosnia and Herzegovina. A failed attack was also observed in European state development agency as reported on cyber news on 11 Jan 23 [23].

Figure 10 New Dark Pink APT Group

6.4.1 The Space Front

Hacker group NB65 claimed to influence routine actions Roscosmos, the Russian space agency invasion of Ukraine. Although the claim denied but US CISA and FBI requested to boost cyber defence of communication satellite on 21 Mar 2022 posted on cybernews. [24]

6.4.2 Russian involvement in US Election

Perception can be managed and molded through use of technology as done by Russia during US presidential election of Donald Trump

Figure 11 Russian Involvement in US Election

6.5   Internal Security : Audio Leaks of Pakistan PM Office

Indishell hacked 100 audios having 8 GB data from PMO. This data is available on dark web, which contain talks of Prime Minister of Pakistan with high profile people including those who are influential and not in power. [25]

Figure 12   PM Office Audio Leaks

6.5.3   Cobalt Gang Phishing Campaign

Colbalt is an organization of cybercriminals who recognized for its precision and persistence in cyber-attacks against banks. Russian intelligence firm Group-IB inform that the Colbalt may have stolen almost as €1 billion over the last two years from banks in 40 countries. In December 2017 they executed their attack onGlobex Bank's SWIFT systems. [26]
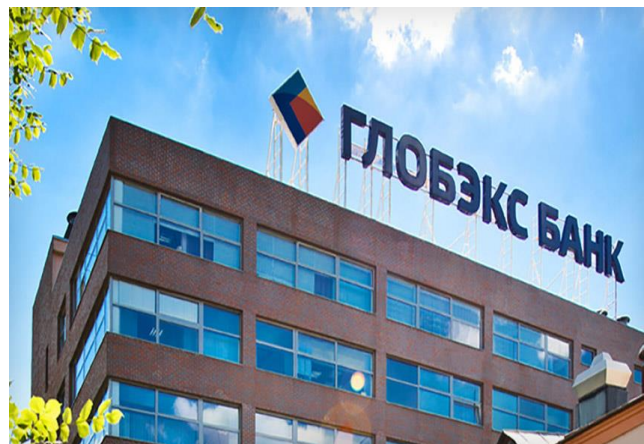
Figure 13 Cobalt Gang Phishing Campaign

6.6   Human Security : Privacy Protection

Development in technology where has provided great comfort for availability of information; there it also has effect on privacy protection. Punjab Information Technology Board (PITB) provided a mobile API platform for data leak. In Jan 2019, PITB alleged for data loss of 200M users. Private and confidential data of Pakistani citizens got compromised [27]. Pakistani citizens data available for sale on dark web and Social media networks included:-

1. Family tree of Pak citizens available on Rs. 150-200
2. Police and land record
3. Mobile Data including CDR

6.6.3 NADRA Biometric Data Leak

Cybercrime wing of FIA revealed that biometric data of NADRA has compromised. The data is hacked during biometric verification of SIMS [28].

6.7   Energy Security : Russian Cyberattack on Ukraine Power Grid

Ukraine's electric power has been hacked and disabled twice in 2015 and 2016. Similar cyberattack launched again by cybercriminal who affiliated with Russian military in 24 Feb 2022, which could not succeeded [29].

6.7.1 US Energy Firm Cyber Scan

FBI warn that network of five US energy companies have been scan by cybercriminal for possible cyberattack [30].

6.8   Health/ Food Security : US Hospital Cyberattack

Russian cybercriminal Killnet has targeted 14 US healthcare organisations. The group is famous for DDoS attack over public channels [31].

Figure 14 US Hospital Cyberattack

6.8.1 Food giant Dole Temporarily Shuts

Grocery production plant of food giant Dole temporarily shut after cyberattack throughout North America as informed by senior vice president of the company on 10 Feb 2023 [32].

6.9 Environmental Security

Russia's M11 motorway Electric vehicle charging station between Moscow and Saint Petersburg went under cyberattack owing to weak cybersecurity [33].

6.10 Cyber Security : Russian Spy Revealed in Data Leak

Russian spy exposed in cyberattack in which over 600 allegedly agents of Federal Security Service are operating in Europe [34].

6.10.1 Bot Farms Frighten Ukraine Citizen

Ukraine claimed destruction of five bot farms involved in frightening its citizen. The Security Service of Ukraine accused Russian behind the farms [35].

6.11 Technological Impact Summary

Details	Global Security	Military Security	Economic Security	Foreign/ Border Security	Internal Security	Human Security	Energy Security	Health/ Food Security	Envmtal Security	Cyber Security
Policy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Legal Framework	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Technical	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organizational	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Capacity Building	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cooperation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 4 Technological Impact on NSS

<div align="right">**Chapter 7**</div>

Technological Threat Landscape and Indicators for NSP

7.1   Technological Threat Landscape

- Act of Human Error or Failure (accidents, mistakes).

- Compromises to Intellectual Property (piracy, copyright infringement).

- Acts of Espionage or Trespass (unauthorized access and/or data collection).

- Acts of Information Extortion (blackmail of information disclosure).

- Software Attacks (viruses, worms, macros, denial of service (DoS).

- Forces of Nature (fire, flood, earthquake, lightning).

- Quality of Service Deviations from Service Providers (power & WAN service issues).

- Technical Hardware Failures or Errors (equipment failure).

- Technical Software Failures or Errors (bugs, code problems, unknown loopholes).

- Technological Issues (antiquated or outdated technologies).

Critical Analysis of NSP 2022-2026

8.1   Overview of Policy: Policy Formulation

- **The Need**:   To start, **Section One** of NSP reflects upon Policy formulation. Separate security policies to include military, internal, foreign, economic, cyber, food and climate among other articulated by various governments in Pakistan. These policies did enhance Pakistan's security in their respective domains, but the country still lacked a comprehensive security policy to bring all elements of power under one umbrella. In order to offer all-encompassing guidance and direction, National Security Policy document proposed.

- **The Process**: The **development:** process started in 2014 and after extensive consultations of about 8 years, the policy issued with a buy-in from all stakeholders, specialists and even with university students, which is likely to ensure sustainability of its recommendations.

- **Periodic Review of NSP:** The National Security Division planned NSP for a duration of five years and is responsible for its review and recommendation on a yearly basis, or when a new government formed, or in case of a major event, that has far-reaching implications on Pakistan's security. NSD is also responsible for monitoring the implementation of the NSP.

8.2   National Security Framework

Section two of the document discusses National Security Framework and the central theme of this section states that: *A country is as secure as its most vulnerable citizen. The safety, security, dignity, and prosperity of citizens in all their manifestations will remain the ultimate purpose of Pakistan's national security* [36].

8.2.1 National Security Vision

The vision of national security of Pakistan comprehensively written and the gist of the same includes visualizing the state as an Islamic welfare nation, universally pertinent and aligned with worldwide principles. Peaceful, connected with shared prosperity, secure

and economically resilient, ensuring fundamental rights and social justice, and promoting good governance.

8.2.2 Conceptualising National Security

The national security framework introduced a concept of comprehensive national security, **conceptualising** the elements of policy necessary to achieve citizens' -- safety, security, dignity, and prosperity. **Economic security** placed as the core element.

8.2.3 Principles of Implementation

NSP also outlines few principles that discuss its formulation and implementation.

- Whole-of-government methodology suggests rotating security challenges into chances through synergy amongst all organs of the state to fulfil growing requirements of inclusive national security.
- Policies demands canalizing all elements of national power for achievement of Pakistan's vital interests.
- To and strengthen state-citizen relationship effort are required to demonstrate self-reliance on state people and institutions.
- Introspective and pragmatic approach will be adopted for decision making about national security.
- Through far-sightedness and planning, the nation has to alleviate threat by identify and capitalize on opportunities.
- Ensuring security and continued prosperity by adopting graduated approach and **prioritizing** policy interventions.
- Finally, for the continuation of the policies, consensus on vital security issues through devoted strategies is required beyond political differences.

8.3   National Cohesion

Section three of the document deliberates Upon National Cohesion - and the central theme of this section is *based on the principles of equality and justice.*

- Under the ambit of Opportunities and Challenges, NSP identifies three key factors, namely Identity and Culture, Socio-Economic Inequalities and Governance & Institutional Capacity.

- Pakistan's ideology based on Islamic principles, which allows diverse culture and pride to its citizen.

- For development national cohesion, socio-economic inequalities correctly pointed out and step suggested reducing the same.

- **Policy Guidelines**: NSP also spells out the policy guidelines for the implementation of these factors to ensure National Cohesion

  a. **Policy Guideline** for "**Preserving our Identity**" based on *Islamic character preservation.*

  b. **Policy Guidelines** for "**Ensuring Unity and Stability**" *through democratic process.*

  c. **Policy Guidelines** for "**Making Public Service Responsive**" by strengthen *local levels with e-governance.*

8.4 Securing Our Economic Future

Section four titled as **Securing Our economic Future** and the central theme of this section revolves around economic growth for prosperity and sovereignty.

8.4.1 Opportunities & Challenges

Challenges to Economic Security. Economic security aspect of NSP focuses on follow three major challenges:-

- **External Imbalance**: Current Account Deficit has created external imbalance, which will be reduced through Foreign Direct Investment, increasing export and facilitating business growth.

- **Vertical Inequalities**: Gap between rich and poor has been identified as major socio-economic inequality. Such inequality can cause social disturbance and political insecurity.

- **Horizontal Inequalities**: Gap in economic activities in various part of country exists. Removal of this inequality placed on priority for national security.

8.4.2 Opportunities in Economic Security

The opportunities identified in Economic Security include Growth and Development; Trade, Investment and Connectivity; Fiscal Management Energy Security and Education, Technology and Innovation.

- First, the **Growth & Development**, demands enhancing banking sector and access to financial services.
- **Trade, Investment and Connectivity**, can be capitalized using geo location through CPEC and East-West connectivity.
- Pakistan's energy sector remains a critical challenge. Pakistan will maximize energy production based on indigenous resources through onshore and offshore energy exploration.
- For **Education, Technology and Innovation**, identify knowledge creation approach instead of knowledge consumption by linking economy and income with science and technology.
- The **Policy Guidelines** listed in National Security Policy are:-
  a. In the domain of **Economy and Trade** for competing global economy, reliance placed on investment, trade and connectivity.
  b. For **Energy Security**, the policy guidelines are based on *cost-effective energy provisions at home-based and from overseas for economic growth*.
  c. In **Education Security and Global Human Resource**, the National Security Policy guidelines for global competition placed on skilled and educated nation.
  d. The policy guidelines for **Emerging Technologies and Artificial Intelligence** are on knowledge creator for fourth generation of industrial revolution.

8.5   Defence and Territorial Integrity

Section 5 of National Security Policy which deals with **Defence and Territorial Integrity** and the central theme of this Section focused on *defence and territorial integrity.*

This Section highlights 6 major Opportunities and Challenges; which are related to Securing our Borders; Conventional Military Threat; Maritime Competition; Strategic Stability; Information and Cyber Security Threat and Hybrid Warfare which includes

- **Securing Our Borders** essential to manage border clashes and security of land.
- To ensure territorial integrity against **Conventional Military Threats** defence investment for equip our military power with technology without involving in arm race be ensured.
- **Maritime Competition** to protect our EEZ for liberty of navigation and protection of our privacy remain vital.
- **Strategic Stability** will be achieved with full spectrum nuclear deterrence, with conventional elements of National Power.
- **Information and cyber warfare** becomes fifth dimension of traditional security ad must be organized to mitigate new emerging security domain.
- One of the most critical and perpetual challenge is **Hybrid Warfare** initiated by state, non-state actor and proxies against Pakistan. United front is required to handle mis and disinformation for national security.

8.5.1 Policy Guideline

- National Security Policy provides Guidelines for **Defence, Deterrence and Territorial Integrity**.
- The policy guideline for **Space, Information and Cyber Security**.

8.6 Internal Security

- **Internal Security:** The central theme of this section states that: "*A stable and secure Pak where citizens enjoy their constitutional privileges and are protected against violence, extremism, and crime, and where rule of law is upheld equally for all*". The major challenges includes:-
- **Terrorism**: Pakistan pursues **zero tolerance for terrorism** on its soil. Despite successful war against terrorism, the threat of terrorism from hostile actors still persists.

- **Sub-nationalism**: Socio-economic disparities exploited by sub-nationalism. Pakistan's policy engagement encompasses cutting off recruitment, terrorism financing and pursuing socio-economic policies.
- The **ethnic and religion-based terrorism** in Pakistan has to be addressed through interfaith and inter-sect harmony and taking action against hate crime.
- **Narcotics Trafficking and Organized Crime** based violence threatens the safety of youth. Fighting these menaces is a necessity.

8.6.1 Policy Guidelines
- **Securing Pakistan Internally**
- Ensure the '**Rule of Law**

8.7   Foreign Policy in a Changing World: Pakistan's Foreign Policy in a Changing World: demands prosperity through economic and political diplomacy.

- The **Opportunities and Challenges** in the domain of **Global Realignments** cover the international scenario marked by great power competition; regional pivots; new connectivity initiatives; hybrid conflicts; technology and innovation.
- **Developing World Order:** Pakistan has assumed a vibrant approach to the fast changing world order. Pakistan's geo-economic location as a melting pot of regional and global economic activity can project Pakistan's positive reality as a responsible sate striving for peace within and beyond.
- Pakistan, in the external context, remains devoted to normalization of affairs with neighbors while maintaining mutually beneficial relations with all major powers.
  a. Jammu and Kashmir resolution a vital interest for national security of Pakistan.
  b. Despite Pakistan's desire to improve ties with India, the outstanding Kashmir dispute, investment in defense and access to military technology, exceptions in non-proliferation laws and its disinformation operation against Pakistan are major hurdles.
  c. Pakistan's support for peace in Afghanistan is driven by the need to open the gateway for economic connectivity with Central Asia.

d. Improvement in intelligence sharing and patrolling along the Pakistan-Iran border is needed for regional peace and stability.

8.7.1 Rest of the World

Outside the immediate neighborhood**, the Middles East and West Asia, USA, UK and Europe, Central Asia and Russia and other Important Regions**.

A **disturbance-free Middle East and the West Asia with interconnection** are important for economic growth of Pakistan.

While avoiding the **'camp politics',** Pakistan seeks to diversify its relationship with the USA in economic, counter-terrorism, security, and intelligence cooperation.

- Pakistan is committed to not only strengthening but exploring new opportunities in economic ties and cooperation on strategic issues with post-Brexit United Kingdom and the European Union.
- Pakistan's geo-economic pivot, called as '**Vision Central Asia',** is focused on enhancing economic ties with Central Asia and Russia.
- Pakistan exploring opening in energy trade and security by arrangement with **Asia-Pacific, Africa, Australia and America**.
- Pakistan strongly believes in **multilateralism. Multilateral organizations** with salience for Pakistan's interests include the **UN, IMF, WB, OIC, SAARC, SCO and ECO**.
- Pakistan will continue to champion global causes like Islamophobia, xenophobia, climate change and debt relief.

8.7.2 Policy Guidelines

- **On Foreign Policy** the policy guideline is for prosperity of nation while preserving national interest with economic and political diplomacy..
- **Conduct of Diplomacy,** the policy guideline seeks *proactive and self-confident approach*.

8.8 Human Security

The last Section of Pakistan's National Security Policy document covers **Human Security.** The central theme of this section revolved around youth*"*

The **Opportunities and Challenges for human Security include Population Growth and Migration; Health Security; Climate and Water Stress; Food Security; and Gender Rights**.

- Pakistan's youth bulge and fast urbanization need futuristic planning.
- Pakistan is committed to improve its public health ecosystem.
- Pakistan, one of the most climate and water stress countries, requires Climate Change Policy implementation.
- Increasing food production, social safety nets and implementing National Food Security Policy are imperative.
- Ensuring gender equality, human rights protection, safe workplace environment for women and transgender are priorities.

8.8.1 Policy Guidelines

- For Human Security, the policy guideline seeks productive population.
- The policy guideline for Health Security look for healthy nation to contribute prosperity and progress.
- The policy guideline for Climate Resilience and Water Security focused on climatic changes for water management.
- The policy guideline for Food Security seeks to adopt climate resistant agriculture and value-added exports.
- The policy guideline for Gender Security seeks women empowerment.

8.9 Policy's Strengths

- **Policy Formulation**

  a. A Comprehensive policy - brought non traditional and traditional security under one canopy.

  b. Policy formulation inline with academia model -cooperate all stakeholders for its formulation.

  c. Five years policy with yearly review under NSD.

- **National Security Framework**

  a. Vision is based on Islamic welfare state.

b. Conceptualize security of citizen centric.

c. Whole-of-Govt approach implementation.

- **National Cohesion**

 a. Well defined on Islamic principle of justice and equality though good governance.

 b. Policy guideline defined for Identity, Public Service Responsive, Unity and Stability.

- **Securing our Economic Future:** Policy guideline defined for Economy and Trade, Energy Security, emerging technology and AI

- **Defence and Territorial Integrity**: Policy provide guideline for Territorial Integrity, Information and Cyber Security as well as space security.

- **Internal Security**: Policy guideline for Securing Pak Internally and rule of Law defined to ensure Internal Security.

- **Foreign Policy in Changing World:** Policy guideline for Foreign Policy and Diplomacy.

- **Human Security:** Policy Guideline for Population & Growth, Health, Climate Resilience & Water, Food and Gender Securities.

8.10 Weakness/ Limitations

- **Policy Formulation**: Thematic approach as intellectual input in the policy adopted. Intellectual Input to incorporate Technological advancements in respective domains merits specialized projects. 5 year is less time for implementation of policy.

- **National Security Framework**: Safety, security, dignity and prosperity of citizen were defined as purpose of National Security. Privacy in all their manifestations are not included.

- **Securing our Economic Future**

 a. STI in all their manifestation for sustainable growth not defined in policy guideline.

b. Emerging technology moved from Forth Industrial Revolution to Fifth Industrial Revolution.

- **Defence and Territorial Integrity**

  a. Space, Information and Cyber Security are separate domains and not explicitly defined.

  b. Policy objectives sets for Space, Information and Cyber Security are limited, defensive in application.

  c. Technological impact on traditional and non-traditional security not covered and synergized.

- **Internal Security**: Internal security for its citizen are defined however, netizen security are not covered (Internet sovereignty).

8.11 Key Recommendations

- **Policy Formulation**: Specialized projects as intellectual input in the policy be adopted to incorporate Technological advancements in respective domains.

- **National Security Framework**: Privacy should be made part of national security framework for safety, security, prosperity and dignity of citizen.

- **Securing our Economic Future**

  a. STI in all their manifestation for sustainable growth be defined in policy guideline.

  b. Focused approach for Fifth Industrial Revolution basing on capacity and capability.

- **Defence and Territorial Integrity**

  a. Space, Information and Cyber Security are independent domain.

  b. Technological impact on traditional and non-traditional security can be covered and synergized by intro Cyber Space in NSP.

  c. National Technological Framework is imperative to Synergies National Security efforts among various National Powers.

<div align="right">**Chapter 9**</div>

<div align="center">**Conclusion and Future Road Map**</div>

9.1 Conclusion

Security is not an ontological given, but a shifting political building who's meaning changes across time, space and knowledge. Moreover, relationship of security in relation to sovereignty and identity changes in Critical Security and Realism. Ever changing international political situation and advancement in technology stresses intellectual discussion on NSP. Technology advancement has great impact on national security owing to changing and growing threat landscape. Technical knowledge creator can define the national security in 21st century using project approach.

9.2 Future Road Map

- **Policy Formulation:** Specialized projects as intellectual input in the policy be adopted to incorporate Technological advancements in respective domains.
  a. AI impact on National Security.
  b. Fifth industrial revolution and its impact on National Security.
  c. Internet Sovereignty.

- **Securing our Economic Future**
  a. Fifth Industrial Revolution.
  b. Policy guideline.
  c. Policy Objectives.

- **Space Security**
  a. Opportunities and Challenges.
  b. Policy Guidelines.
  c. Policy Objectives.

- **Cyber Space**
  a. Opportunities and Challenges.
  b. Policy Guidelines.
  c. Policy Objectives.

- **Internal Security:** Internal security for its **netizen** (Internet sovereignty).

- **Threat Landscape**
  a. Identification.
  b. Prioritization.

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