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A Thematic Analysis Based Study Of Environmental Degradadtion As A Non-Traditional Security Challenge & Governance Reposne In Pakistan

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Abstract
Pakistan is 5th most vulnerable country to climate change in the world. Diverse environmental challenges like pollution, deforestation and biodiversity loss etc faced by Pakistan are far more convoluted spilling beyond scope of "Climate Change". Perpetual onset of Extreme Weather Events tends to undermine human and overall national security. Seven categories of human security and all of the eight Millenium Development Goals in Pakistan are endangered by environmental degradation. This qualitative study is aimed at discussing role of environmental degradation as Non-Traditional Security Challenge to Pakistan, and response of prevailing governance framework. Thematic analysis of the Key Informant Interviews using Atlas.ti reveals intrinsic issues in the environmental governance in Pakistan, which is followed by actionable recommendations.

Key Words: Climate Change, Environmental Governance, Human & National Security, Extreme Weather Events, Food Security, Inter / Intra State Conflicts.

Introduction

Modern governments are confronted with diverse challenges to undertake functions which are increasingly assuming intricate shape, scope and hence meriting commensurate response options. Notwithstanding the traditional security threats entailing the inter and intra state military conflicts, the modern world is witnessing a surge in emerging threats which are neither traditional nor holistically military in nature. These Non-Traditional Security (NTS) threats encompass challenges including social and economic issues like food & energy security, water scarcity, population explosion, pandemics, migration and drug trafficking which have become part of the security agenda (Dadwal et al., 2017). Challenges to the global governance are getting more multifaceted, intricate and cumbersome. Environmental "good governance" is becoming a serious challenge across the globe as aptly described in a recently published "State of Global Environmental Governance" report by Allan et al., (2024) which attributes 2023 as a "sobering year" owing the pace at which environment is degrading and Bio diversity loss is progressing.

Pakistan is included in top 5 countries most vulnerable to natural disasters and Extreme Weather Events, (Asghar et al, 2024). Persistent heat waves, changing patterns of monsoon rains, winters & summers, earthquakes, floods, droughts and cyclones have inflicted Pakistan with heavy losses. This environmental degradation has direct linkages with reduction in agricultural product, food shortages, natural calamities and water related issues for Pakistan (Hussain et al., 2020). A literal chain reaction of natural disasters has been unleashed on Pakistan in last two decades with more than 150 natural disasters including Flash, Urban and Super floods led the way, with the latest floods in 2022 affecting 33 million people and incurring more than $30 Bn in economic losses (Burke et,.2023).

A country like Pakistan, already embroiled in host of political and socio-economic challenges an onslaught of environmental challenges could have a significant impact on the human and national security (Shamsi, 2023). Environmental degradation is exacerbating existing health challenges thus adding further pressure on our fragile health system (Ali & Shah, 2023). A country like Pakistan with serious environmental challenges without a meaningful mitigation strategy will invariably present itself as a lucrative target for traditional security threats, (Rauf, 2020).

Apropos, the research in hand is aimed at identifying the impact of environmental degradation on Pakistan's National Security and response under prevailing governance framework with a view to identify grey areas and recommend appropriate measures.

Literature Review

Securitization of Environmental Challenges in the Global Discourse

According to Johnson et.al (1997), environmental degradation can be explained as any undesirable and harmful variation in the natural environment. The United Nations International Strategy for Disaster Reduction defines environmental degradation as "The reduction of the capacity of the environment to meet social and ecological objectives, and needs". Environmental degradation has been included in the ten most significant threats listed by UN's High-level Panel on Threats, Challenges and Change (UN, 2004). However, as explained by Maertens & Trombetta (2023), notwithstanding issues of human security and challenges to humanity getting a global significance under the ambit of United Nations Security Council, the states still assume a pivotal position in responding to these challenges.

History contains numerous examples wherein extreme climatic events have resulted into large scale conflicts. Environmental conditions are known to have a decisive say in deciding fate of communities, nations and civilizations. For instance, prolonged dry spells couple with extreme cold weather in 4th Century AD resulted into displacement of Huns and German tribes into the region of Gaul which had moderate living conditions. This move eventually led to the capture of Rome by Visigoths. Some historians attribute expansion of Muslims towards Mediterranean and Southern Europe by the drought in the Middle East. Vikings, the inhabitants of Green Land are believed to be eliminated in 15th Century AD, in the era of "Little Ice Age" entailing abrupt fall in temperatures in the region (Dupont & Pearman, 2006).

Climate change saw its consideration as one of the latest catalysts of human conflict by the researchers in 1970's and 80's. Discourse on environmental issue having linkages with security at regional and international literature finds their traces in early 1970's. Experts like Falk (1971) and Brown (1977) discussed implications of environmental issues in political, economic and human security domains. His main hypothesis was that natural disasters and climatic events will have direct impact on the security of essential resources, social and political stability in any country (Shahid, 2021).

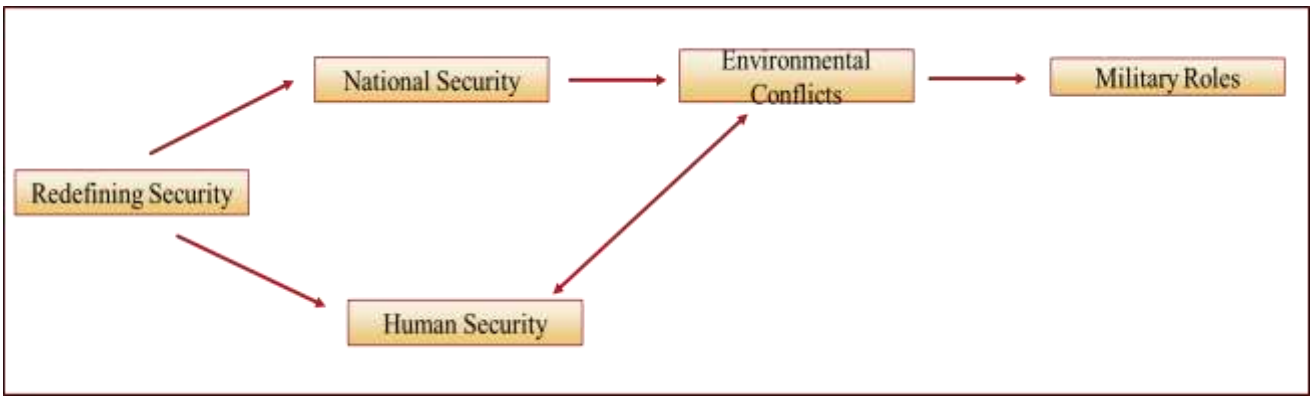

Figure 1: A Guide to Environment – Security Linkages, Source: Barnett J (2003)

Decade of 1980's witnessed enhanced interest of academia on this important subject. Initially only considered as a "Peripheral issue" primarily of the interest of environmental experts, its real implications threatening the global environment started to appear in 1990s. Discussion on reduction of greenhouse emissions, fossil fuels and overall rising global temperature started to gain global leadership's attention. Experts like P. Schwartz and D Randall, realized the increasing threat posed by climate change to food and water security, migration, natural habit and resources. Realizing its potential to trigger inter-state conflict of unprecedented scales, they labeled climate change as a *"mother of all security problems"* (Schwartz & Randall, 2003).

Climate change creates a path to scarcity that leads ultimately to disaster. It is believed that creation of state of "Scarcity" automatically triggers a state of competition between rivals. This competition once aggravated, fueled by growing resource scarcity may lead to a violent conflict. The countries already possessing ingredients for conflict like poverty, poor governance and political marginalization are likely to experience more adverse impact of climate as compared to others (Dupont & Pearman, 2006).

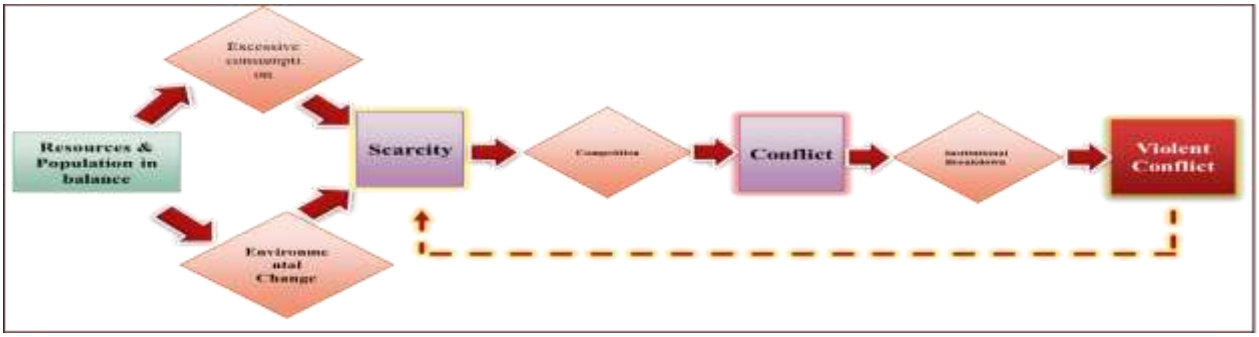

Figure 2 Common conceptualization of security impacts of environmental Changes. Source: Brown et.al (2007)

As per Rapkin & Avery (1986), there in an internal dimension to the national security which is function of legitimacy of the state over its populace. The governments with high risk of internal instability due to external factors like global climate change and international business environment tend to have less legitimacy hence probability of internal conflict increases. Climate change intensifies existing risks and vulnerabilities in societies, making conflict more likely (Anderson,2024). In an article titled "Climate and Conflict: The Security Risks of Global Warming" Scheffran and Battagilani (2011) predicts weakening of states and resultant reduction in their capacity to be able to proffer an effective response to the rising threats posed by climate change. Climate change also has direct linkages with how militaries operate within the national security paradigm. The peace and stability of a country or region may deteriorate to a level where military intervention may seem as the only way to avert hostilities (Barnett, 2003).

Dse Souza Boenu (2015) mentions that climate change has been cataloged amongst the traditional and non-traditional security threats by the US, EU and North Atlantic Treaty Organization (NATO). According to Shahid (2021) tactical doctrine of NATO, EU and US have equated the threat of climate change to the devastation which is likely to be caused by weapons of mass destruction (Shahid, 2021).

According to the forecast by Consultative Group on International Agricultural Research, climate change will have adverse impact on the Agri-eco systems, resulting into a considerable 20% decline in agricultural production across Asia. Developing and under developed countries with rural economics banking mainly on agriculture, like Pakistan, will be the biggest sufferers of this decline. According to a study by Arnell (1999), 20% of global decline in water availability has been a function of climate change. Another aspect meriting attention in this regard is fast melting of glaciers due to rising global temperatures (Bajracharya et al., 2008).

In recently published research by, McIver et al., (2024) have quoted 6th assessment report of the Intergovernmental Panel on Climate Change (IPCC) published in 2023 which demarcates climate induced health issues as severe, widespread, generally underestimated and worsening over time. As per WHO estimates, approximately 1,54,000 deaths annually occur due to the causes having direct linkages with global warming. Health issues can quickly transform into national security crisis if population in large numbers starts getting affected from the diseases (Roy et, al., 2020). It is anticipated that by year 2080, risk of flooding due to sea level rise for inhabitants of small islands would soar up to 200 times due to the impact of global warming (Nicholls et, al., 2007). These risks of deaths, devastation and inability to appropriately recover for both homes and livelihoods adds to the gravity for the low-income countries. According to a study by International Committee of the Red Cross (ICRC), people in low income or poor countries have 400% more chances of death after the disaster as compared to the population of developed countries (Dupont & Pearman, 2006).

Relationship between climate change and social inequality has been attributed to a vicious cycle. This means that as a result of initial inequality, vulnerable groups suffer disproportionately from the harmful implications of climate change. The overall scenario further deepens the divide of inequality amongst the society. With passage of time the inequality assumes the adverse form by minimizing relative capability of these people to cope up and subsequently recover from the setbacks (Islam & Winkel, 2017).

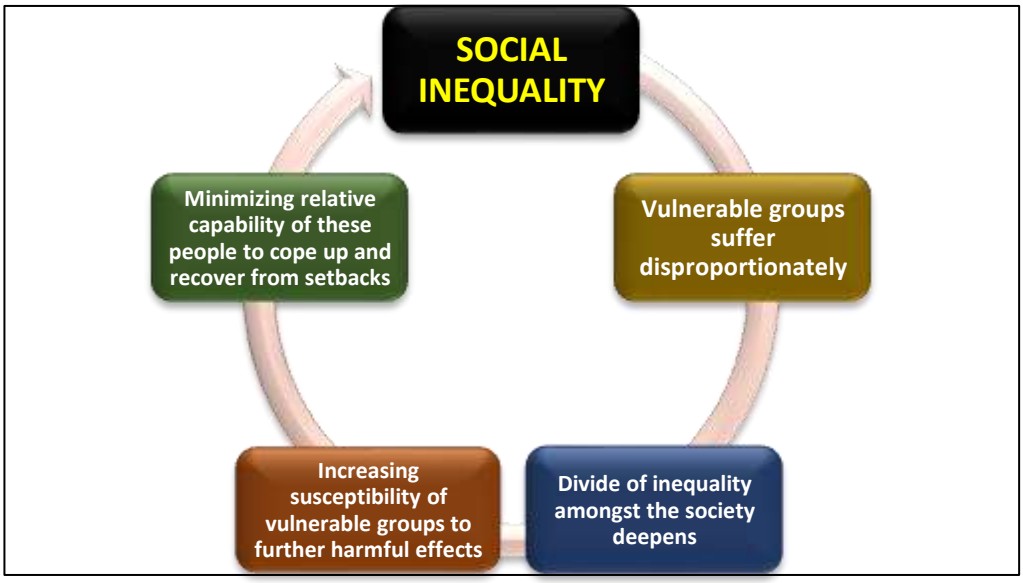

Figure 3 Climate Change and Social Inequality as per Islam & Winkel (2017)

Environmental Degradation as Casus Belli of Impending & Future Disasters: A Global Perspective

The intergovernmental Panel for Climate Change (IPCC), released its 6th assessment report on 2 March 2023 (Lee, et.al., 2023). Key findings of the report include:-

- Unabated emission of greenhouse gases (GHG's) has continued through human activities.
- Carbon dioxide concentrations during 2019 was estimated to be 410 parts per million which is considered to be higher than any recorded internal during past 2 million years (Lee, et.al., 2023).
- The decade between year 2010-20 witnessed 15 x times higher deaths from extreme natural disasters for regions with higher climatic vulnerability (Lee, et.al., 2023).

- Climate change has seriously impacted food security and water scarcity across the globe which has a retarding effect on efforts to attain sustainable development Goals (SDGs) (Lee, et.al., 2023).
- Extreme sea events, previously occurring at a frequency of 1 event per century, may be witnessed even annually by same countries (Lee, et.al., 2023).

Dr Peter D. Carter, the Director Climate Emergency Institution, Canada has presented eye opening account of the devastating impact climate change could have on human lives and society in a series of posts on social media platform "X" formerly "Twitter". In a tweet dated 16 Feb 2023, he shared a graph entailing temperature calculation and estimations dates for from 10,000 BCE i.e., approximately 1,25,000 past years. In the revealing yet anticipated piece of information, Carter is of the view that changes in the global surface temperature happening in this era are the most unprecedent ones in last 1,25,000 years.

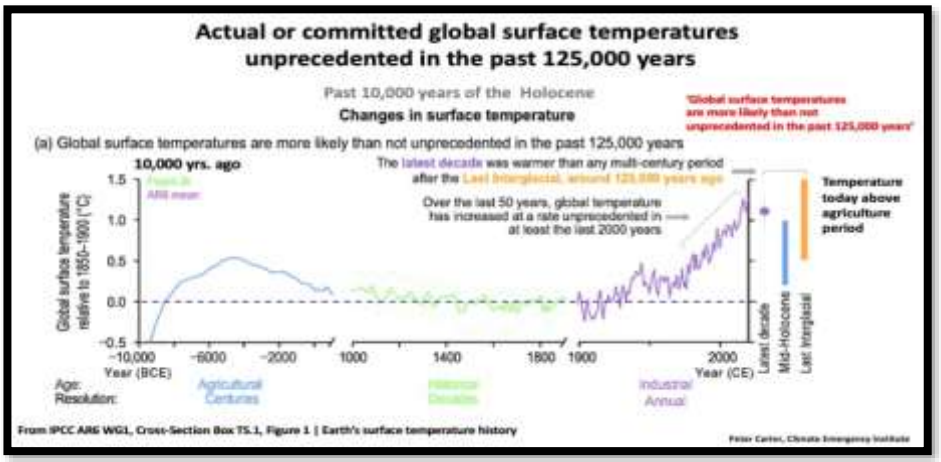

Figure 4 Unprecedent Rise in Global Temperatures in the Past 125,000 years

As per NOAA study, as quoted by Carter (2023), past century has witnessed an average 20 cm rise in global sea levels. However, the same sea level rise has more than doubled to 0.36 cm per year between 2006-15. The data shared by Goddard Institute for Space Studies, surface temperature of the globe in 2022 stood at +1.16 ℃ making 2022 as the 5th warmest year as per the available record. Global average temperature is expected to rise from 1.16℃ to 1.5℃ in 2024 which is a seriously high number.

Galgano (2019) predicts that 46 countries across the globe with the accumulated population of 2.7 billion are at high risk of violent conflict triggered by climate change due to serious impact on the social, political and economic situation. Another 56 countries with over 1.2 billion inhabitants currently have the potential of confronting the violent conflict in the long-term basis. Dagnachew et al. (2021) are of the view that, the devastating impact of natural disasters and allied challenges have the wherewithal to seriously hamper the progress towards the attainment of Sustainable Development Goals (SDGs).

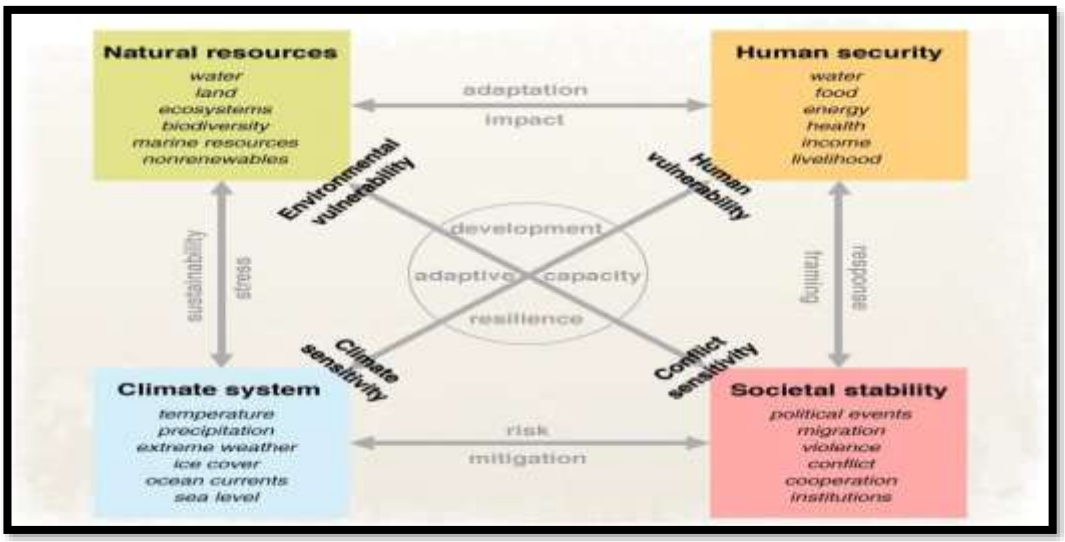

Figure 5 Linkage between climate change,natural resources, human security and societal stability
Source: https://science.sciencemag.org/content/336/6083/869/tab-figures-data

Environmental Degradation as an Existential Security Challenge for Pakistan

In a recently published research Adnan et al., (2024) are of the view that a country like Pakistan is at the forefront of the climate catastrophe despite being a minor contributor (less than 1%) of the global emission toll of the Green House Gases (GHGs).

The impact of climate change on Pakistan is significantly pronounced due to its peculiar geophysical location making it depend on Himalayan glaciers and monsoon rains for critical requirements of water. Changing climate has the potential to cause serious repercussion in terms of floods, droughts, heat waves, smog and hurricanes etc. All of these challenges will require diversion of significant quantum of fiscal resources towards rehabilitation and restoration of affected population and infrastructure. This diversion will invariably contribute towards slowing down the socio-economic development, economic growth and compromise on attainment of SDG's (Kakakhel, 2019).

Pakistan is specifically vulnerable to environmental degradation and is ranked as 5th most affected country on Global Climate Risk Index 2020 (Eckstein et. al, 2019). Country Climate and Development Report (CCDR) by the World Bank projects that climate change will result in a 7-9% fall in Pakistan's GDP by 2030, further shrinking it by 20% till 2050 (World Bank, 2022). Climate induced migration has seen a surge in last 2 decades. Pakistan is estimated to have 0.6 Mn Climate Refugees by 2030, which may rise to 2 Mn by 2050 (Nisar, 2022).

Post-Disaster Needs Assessment (PDNA), by the Planning Commission of Pakistan states losses and damages of $30.2 billion, or 4.8% of the GDP for fiscal year 2022-23 due to floods in 2022. Water scarcity has assumed alarming proportions as Pakistan is now ranked 14 in 17 countries facing extreme risk of water availability (Sheikh, 2022). Environmental degradation adversely impacts on every dimension of human physical and mental health in Pakistan, (IFRC, 2021).

Aisha Khan a renowned climate change expert in her article titled "Cost to the Climate" is of the view that for a country like Pakistan, with rising vulnerability to climate challenges in addition to ongoing economic and political crisis, this future doesn't seem very prosperous. The ongoing and predicated reduction in food, water and energy resources can result into chaos and anarchy. She believes that "*We are living in dangerous times where the future has never been so uncertain and the climate never so threatening to pose an existential threat*." (Khan, 2022).

According to Abbas et.al, 2020, Pakistan is facing a significant climate change challenge. With an average annual rise of temperature by 0.5℃ over the last five decades and quantum of heat absorbed during days and nights increasing by more than five times in last 30 years. Pakistan is likely to witness an overall rise of 3-5℃ degrees as compared with international temperature increase. The rising temperature have resulted in overall deterioration in the environment, reduction in the yields for agriculture and forest cover across Pakistan especially green areas of Punjab, Sindh and South-east Balochistan.

Deforestation

A significant phenomenon contributing towards environmental degradation in Pakistan is its rapid deforestation. Possessing only 2.3% of the forest cover which is facing a great threat of further reduction due to unchecked development activities. This unabated deforestation leads to habitat loss for the wild life apart from the multifarious socio-economic impacts (Abbas et.al, 2020). Area covered by forest as a percentage of total land cover has been on a continuous decline in the recent past. From forest land percentage of 3.28 in 1991, Pakistan's forests percentage declined to 1.91 in 2015, which means a loss of almost 50% in 25 years (Khalid et.al, 2020).

Pollution

Pakistan's quality of air has been a source of continuous concern it is unable to meet the WHO targets of clean air in all three domains since 1990. According to the details quoted during the launch of National Clean Air Policy, 2023 by the Minister of Climate Change, Pakistan is ranked as the 3rd most air pollution affected country of the world in 2021 Siddiqui (2023). Lahore and Karachi are global front runners as the cities with most polluted air as given in air quality index 2022-23. Apart from the environmental hazards, the rising air pollution has inflicted serious harm to the health of citizens across Pakistan. Air pollution has contributed towards reducing average life expectancy in Pakistan by an average of 2.7 years which is an alarming prospect by causing the annual deaths of 235,000 citizens across Pakistan. The economic ramification of rising environmental and air pollution, are alarming with an estimated loss of 47.8 billion US dollars, equivalent to approx. 6% of the GDP (Mehmood et. al, 2023).

Pakistan is considered to have the highest proportion of plastic waste which are unmanaged and untreated, in the entire South Asian region. A staggering 55 billion plastic bags are produced and consumed across Pakistan, every year. As of available data of 2022, annual generation of solid waste in Pakistan amounts to 48.5 million tones, with per capita generation of waste ranging between 0.24-0.65 kg per day which is expanding at a whopping rate of 2.4% annually (Mukheed & Khan, 2021).

Water Scarcity

According to Ashraf, 2018, Pakistan is ranked at number 14 in the list of 17 countries at extremely high risk in terms of water availability. With over 80% of the population currently experiencing water scarcity for at least one month. The country is assumed to be plunged in state of water scarcity as a whole by the year 2025. The situation gets further aggravated being a lower riparian country whose 78% water flows from a hostile Neighbor. Pakistan's water scarcity crisis has been confirmed by indicators like Falkenmark Indicator, Water Resources Vulnerability Index, IWMI Physical and Economic Water Scarcity Indicator and Water Poverty Index (Ashraf, 2018).

Around 80% of water is received by Pakistan through Indus water basin mainly from River Indus and Kabul has its origin outside the territorial domain of Pakistan. Decline in the flow of these waters vis-à-vis growing demand may have serious security implications. It could aggravate Pakistan's complicated ties with India and straining relations with Afghanistan.

Shortage of water due to growing impact of climate change can significantly disrupt Pakistan's agriculture thereby causing food insecurity and unemployment. Shortage of water will seriously reduce the production of hydrological electricity through dams alongside irrigation in the dependent regions. The overall scenario is grim and it can cause political tensions rise to a level where it can lead to intra and inter region conflict (Ahmad, 2023).

Agriculture and Food Security.

Pakistan is predominantly an agriculture-based economy. Agriculture and livestock sectors contribute more than 40% of the entire jobs in the countries and more than 80% of the raw materials for Pakistan's exports. The agriculture sector depends on surface and rain water, whose availability is on a continuous decline. More than 25% decline in the availability of surface water, with changing monsoon pattern has serious repercussions for the agriculture. The entire sector is highly prone to the damaging impacts of climate change. As per studies, 60% of Pakistan is recipient of annual rainfall in the range of under 250 MM, While only 25% of the country as annual average rainfall of the more than 250mm. The overall impact of the geographical positioning, soil condition, dependence on rainfall, surface water and glacier water sources mainly through Indus River makes Pakistan vulnerable to the changing climatic conditions in high-risk zone (Kakakhel, 2019).

Notwithstanding obvious advantages proffered by Pakistan's peculiar geography, it has its own challenges. Availability of more than 5000 Glaciers in the Northern areas who are melting at a rapid pace, causing water shortages of up to 60% of the current availability and has a direct impact on energy and food security of the country. Rapid depletion of water reservoirs coupled with lack of management of the overall water resources has pushed Pakistan into the list of most water stressed countries in the world (Iqbal,2020).

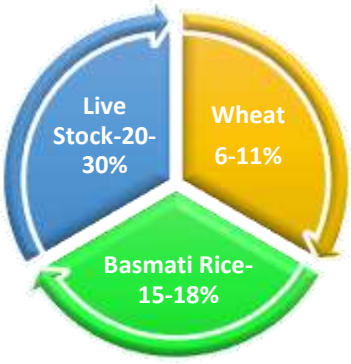

Figure 6 Impact of environmental factors into decline in yields of major crops and livestock by year 2080, Source : Butt (2022)

Rise in Sea Levels. Pakistan has a more than 1000 km of coastline, with its largest city and commercial hub also located in the same zone. The entire region and its population are seriously endangered by the harmful impact of sea level rise. Economic and humanitarian impacts of sea level rise in these regions can be devastating (Kakakhel, 2019).

Socio-Economic Challenges

Hussain et. al (2020), are of the view that growing environmental degradation related implications on various segments of society are widening the existing societal fault lines across Pakistan. This has the potential to aggravate the existing challenges and pose serious threats to the national security of Pakistan. Shahid, (2021) is of the view that these is no reason to deny the fact that environmental degradation is a threat to national security of Pakistan.

According to Akram and Hamid (2015), since independence in 1947, environmental degradation and its alarming impacts found very limited space in the realm of policy making as well as its practical manifestation. However, devastating earthquake of 2005, followed by a series natural disasters like droughts, floods etc have forced successive governments to take practical, steps in this regards. Formulation of National Disaster Management Authority (NDMA), Provincial Disaster Management Authorities (PDMAs) and other related organizations is part of the same process (Akram & Hamid, 2015).

Climate change has particularly negative impact on the socio-economic landscape of Pakistan. During the COP-25, Pakistan was also included in the list of five most significantly affected countries due to climate change during 1999-2018 in the Global Climate Risk Index released by German watch. Non availability of adequate water not only impacts the agriculture and food security rather it significantly impacts Water, Hygine and Sanitation (WASH) facilities are a major cause of health issues in Pakistan. The health issues in Pakistan have been further exacerbated by erratic weather patterns, causing floods, flash floods, cloud bursts, droughts, heat waves, storms, hurricanes and landslides. All these climatic events have direct as well as indirect impact on the overall health of Pakistani citizens (Iqbal, 2020).

Climate induced migration has witnessed a surge in Pakistan during last couple of decades. Devastating floods of 2010 resulted in to creating more than 20 million climate refugees. Torrential rains in Sindh and Punjab during 2011 casued 9.6 million people to displace. 2012 also witnessed similar situation in areas of Sindh and Balochistan. Droughts and water scarcity are other significant factors triggering climate migration in various areas of Pakistan. According to United Nations Convention to Combat Desertification (UNCCD), Pakistan is included amongst 23 countries which are most prone to drought emergencies (Nisar, 2022). These migrations will directly impact the socio-economic and cultural aspects of the hosts and migrant communities. The overall scenario could become a cause to trigger conflict as well owing to the race for

possessing rare and limited natural resources which are diminishing at a rapid pace (Salik et. al., 2020).
National security policy of 2022-26 also recognize the implications of environmental degradation on the various facets of human security across Pakistan. Climate change is not only an existential and multi-sectorial threat, it poses a direct threat to the military security of Pakistan as well (Haider & Sultan, 2022). Pakistan has gradually been able to devise legal and policy frameworks pertaining to environment in order to meet the evolving requirements of international instruments and other binding commitments. However, the real objective of effectively integrating environmental aspects into policy making, planning and development related decision making is far below the desired levels (Durani, 2019).
Devolution of environment as a Provincial subject has been a constant source of debate amongst the environmental experts, legal community and other factions of academia. According to a paper by the Khayam and Ahmad (2020), aimed at analysis of the governance issues emerging out of the devolution process, Pakistan's environment related ratings are on a downward trajectory. The paper quotes a study by Eskstein, et, al., (2019), which ranks Pakistan as 176th in terms of environmental health out of 180 countries. The report places Pakistan at the lowest ratings i.e., 180 out of total 180 countries.

Security Theories and their Applicability on Environmental Degradation Related Challenges
Securitization Theory: Copenhagen School
Applicability of securitization theory to environmental challenges transpire in the form of securitization actors i.e. states as well as regional entities, declaring climate change as an "Imminent and Existential Threat" to their security. Hence requiring urgent measures affording topmost priority including amendments in the prevailing local, regional laws to enable the actors in preventing mitigating and even reversing the harmful impacts. Pakistan has recently witnessed closures and change in timings of schools, offices, kilns in the recent winters due to heavy smog disrupting the normal societal functioning (Bukhari, 2023).

Emancipation Theory: Frankfurt School
There is a genuine connection between emancipation theory's concept of practicing security with environmental degradation, which being a global concern, has impacts ranging from regional, state and human security. There is a global consensus that causes, effects and remedies of Environmental Degradation lie in "collaboration". Neither a single country is responsible for the devastation nor a state can remain aloof from its hazards. Concept of "practicing security", entails the solution to the environmental security challenges world is confronting. Countries & regions are gathering while realizing repercussions. However, emancipation at a global level will only be achieved by collaborative & concrete steps by all states (Floyd & Croft, 2011).

Research Conceptualization and Methodology
The research has been undertaken by using philosophical basis of "Constructivism" which is a logical outcome of ontological stance related to existence of multiple realities which can be examined through "Exploratory or Interpretive Design" by employing "Qualitative Research Methodology". According to Myers & Avison (2002), interpretive studies commonly endeavor to comprehend complex phenomena through the meanings that people attribute to them.In order to collect primary data for the study, in-depth / Semi Structured key informant Interviews (KII) have been used. Secondary data has been gathered from Books, Research papers expert Reports, analysis, country assessments, original dissertations. Official policies, strategy documents from the Govt of Pakistan, IPCC synthesis reports and published work by agencies and allied departments working under UN, World Bank and Asian Development Bank (ADB). X, formerly Twitter, has been evolved as a platform unifying global experts on one page. Twitter posts of various experts and opinion makers on the subject alongside availability of often unpublished or draft studies / research was quite beneficial
To set stage for the collection of primary data, relevant steps from Hajer's (2006) approach has been adopted. Using Hajer's concept of helicopter interviews, initial informal interview sessions were arranged with 5 x most distinguished professionals of different yet relevant fields to act as mentors for the research process. These interviewees have played a very prominent and active part in the realm of policy formulation, decision making and academic / research contribution related to the research topic. Through discussions with these experts, ideas were generated for two main aspects of the research, on selecting the right candidates as stakeholders to interview and the types of questions to include in the interview guide for subsequent indepth semi structured interviews.

Figure 7 Hajer's Steps for Discourse Analysis Source Hajer (2006)

As a result of detailed interaction and helicopter interview sessions with the mentors / experts, "areas of focus" or themes related to research topic were determined around which the questions were framed. The areas include following:-

i. Non Traditional Security (NTS) Challenges faced by Pakistan
ii. Environmental Degradation, its facets and impact on Pakistan
iii. Stakeholders of environment in Pakistan and their response
iv. Efficacy of Environment related Legal and administrative governance framework in Pakistan

Selection of sample (interviewees) from the available universe of experts was mainly based on non-probability sampling technique of Purposive Sampling and its two main sub types i.e. Judgment and Convenience Sampling (Datey & Kuthe, 2015). Resultantly a guideline entailing 19 open ended questions was finalized. After discussion with the experts, undergoing the literature and components of the topic to be covered, 4 groups of stakeholders / respondents was identified to include Environmental Experts (32%), Public Policy Experts & Decision Makers (29%), Academia & Civil Society and Security Experts (16%).

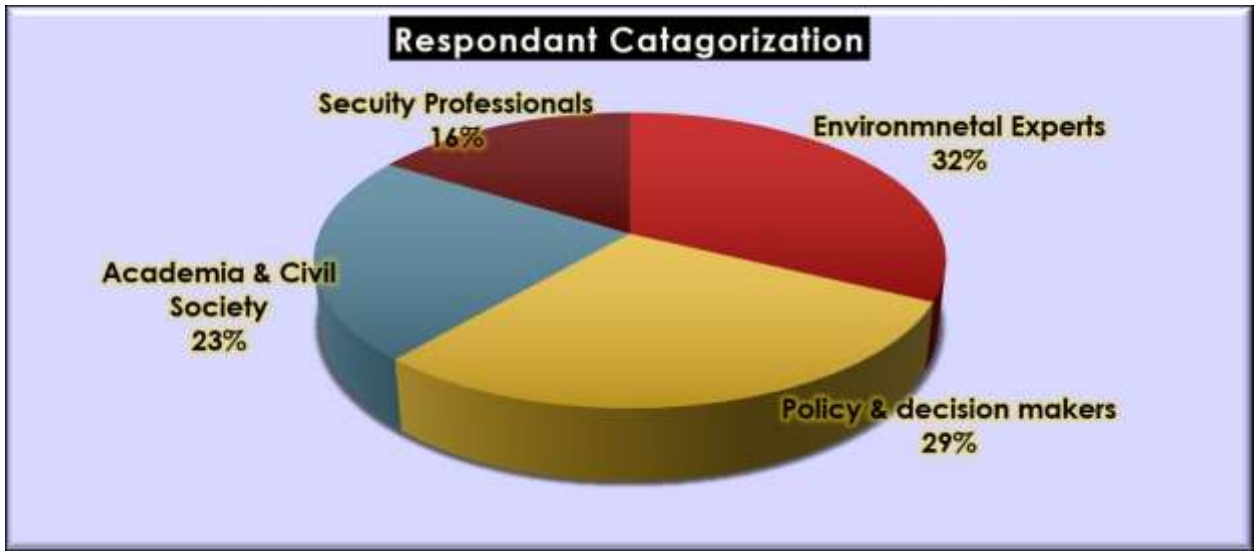

Figure 8 Participant Categorization for the Study

There is no strict rule about number of respondents for interview-based research. However, Guest et al. (2006) found that in qualitative studies, 12 interviews are sufficient to achieve data saturation. The same (12 interviews) has been supported by Clarke & Braun (2006) and Fugard & Potts (2014). Vasileiou et al, (2018), support "Limitation Approach" which says that number of qualitative interviews depends on limitations of project (budget, timing, audience availability, etc.)

Considering expert guidelines, discussion with the mentors and outcome of the initial interviews, a total of 22 x In-depth Semi Structured Interviews with Key Informants were found sufficient to reach data saturation The data gathered was coded and analyzed using paid student version of the qualitative analysis software program ATLAS.ti. This software has facilitated in efficient organization, sorting, search and processing huge volumes of textual data followed by automation of the coding processes in this qualitative research.

Thematic Analysis and Results

Paid, Student Version of the Latest / World renowned Qualitative Data Analysis software Atlas.Ti used for Coding and subsequent "Thematic Analysis" of the accrued data. Hybrid coding type which implies using mix of Inductive & Deductive coding have been employed. In terms of techniques, Descriptive, In-vivo as well as Line by Line coding techniques have been used get to appropriately distilling and sorting data to give us an analytic handle to reach desired conclusions. Exhaustive analysis of the interview transcripts of stakeholders manually as well as with the assistance of Atlas.ti, quotations, independent and sub codes were created. These codes based on the similarity, recurrence and frequency resulted into formulation of code groups which laid foundation for creation of themes. These themes collaborated and were corresponding with the answers desired from the research questions.

According to Barun and Clarke (2006), number of themes generated during a thematic analysis of qualitative research based on semi structured interviews as source of primary data depend on various factors. These include complexity of the research questions and objectives, richness of data and requirement of details to be studies during the research. However, as a general guideline they are of the view that anything between 3 to 6 themes is a manageable number for thematic analysis. Similarly, Guest et al, 2013 in their guidebook for thematic analysis have suggested 2-6 fully developed and in-depth themes instead of superficial themes in large numbers. Vaismoradi et. al., (2013) and Nowell et.al., (2017) have also expressed the similar views about the process of theme generation during the thematic analysis. Another aspect meriting attention is the generation of sub themes under a main theme. In order to have better articulation, organization and in-depth study of the data every main theme may have a number of sub themes. Keeping the guidelines into consideration vis-à-vis the articulation and details required to analyze and explain the data collected in this research a total of 6 Main themes having and 12 Sub themes have been generated.

Theme 1: "*Pakistan is Facing a Wide Array of Non-Traditional Security (NTS) Threats with Environmental Degradation and its Associated Factors being the Most Dominant*"
This theme was generated as an outcome of stakeholder responses on three relevant and interconnected questions asked during the interviews, farming Sub themes as discussed below.

Sub Theme I: "While Non-Traditional Security (NTS) Concept is Not New, These are Increasing in Quantum and Perpetually Evolving"

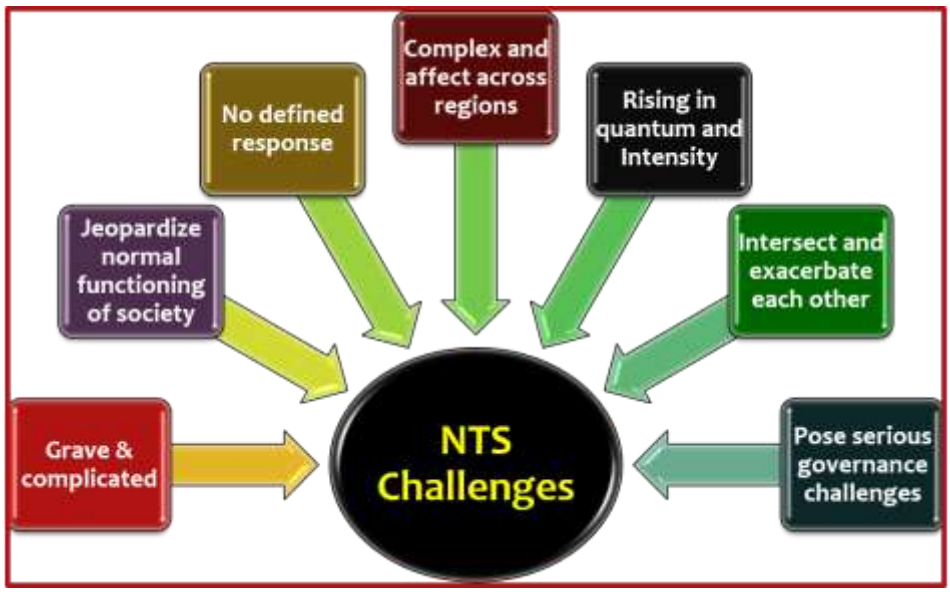

Figure 9 Characteristics of NTS Challenges as Opined by Study Participants

The first question was related to the understanding of the stakeholders regarding the Non-Traditional Security Threats. Depending upon the professional, academic field experience and backgrounds every respondent expressed their understanding of the Non-Traditional Threats. Although the responses varied with security and public policy experts proffering more detailed and near to the text book definitions of the phenomenon while others explained the phenomenon in their own words. However, the most important part was that all the stakeholders had a reasonably fair understanding of the phenomenon. Synthesized opinion of the stakeholders / key informants regarding characteristics of the Non-Traditional Security Challenges are explained in the figure below.

Code Title for NTS Challenge As per Experts	Grounded
Environmental Degradation Including Climate Change	30
Natural Disasters and Extreme Weather Events	19
Pollution (Air, Land, Water)	15
Water Scarcity	15
Food Security	13
Population explosion	10
Deforestation	9
Energy Security	9
Loss of Biodiversity, Habitat Destruction & Ecosystem Disruption	8
Cyber Security	7
Irregular migration	6
Land Degradation	6
Human and Drug smuggling	6
Macroeconomic stability	5
Terrorism and Extremism	5
Infectious Diseases and Pandemics	4
Resource scarcity	4
Rapid urbanization	3
Spread of Gross Disinformation	3
Transnational crime	2
Economic exploitation and monopolization	1
Gender Insecurity	1
Political Instability	1
Poor quality education and low literacy rate	1
Over extraction of natural resources	1
Total Grounded	182

A total of 25 NTS Challenges have been described by various experts as being critical for Pakistan.

8 out of top 10, and 5 leading NTS challenges mentioned by experts in their interviews are related to various facets of environmental degradation (ED)

Environmental Degradation and its associated factors have assumed a whopping 68.1% consideration of the stakeholders as the most significant of the challenges faced by Pakistan.

If we consider the allied or associated factors which are triggered, influenced or aggravated by the environmental degradation the tally goes to 84.6%

Issues with less or no linkage with the environmental degradation have attracted only 15.4% of weightage

Figure 10 Domination of NTS Challenges Over Traditional Challenges

Sub Theme II*: "NTS Threats are Dominating the Contemporary National Security Milieu and Discourse"*
This part of the theme originated from the second question on the subject which was mainly related to comments and opinion of the stakeholders regarding domination of NTS challenges over the traditional challenges in the contemporary environment. All of the experts were unanimous in the assessing that although traditional conflicts have been sporadically happening across the globe. Nevertheless, last few decades have witnessed an overwhelming domination of NTS threats over traditional security challenges. Non-traditional threats are increasingly seen as more serious challenges in contemporary times. These threats, such as climate change, cyber security, food and energy insecurity, have immediate and long-term consequences that can undermine the security and well-being of nations.

Sub Theme III: "Environmental Degradation and its Associated Factors Accrue an Overwhelmingly Appear as Significant NTS Challenges Confronting Pakistan" In the third and final question in this context entailed that the stakeholders were asked to identify major NTS challenges confronted by Pakistan. The challenges identified by the stakeholders in the order of being grounded which denotes usage or repetition of these NTS challenges by different stakeholders are illustrated in the table below.

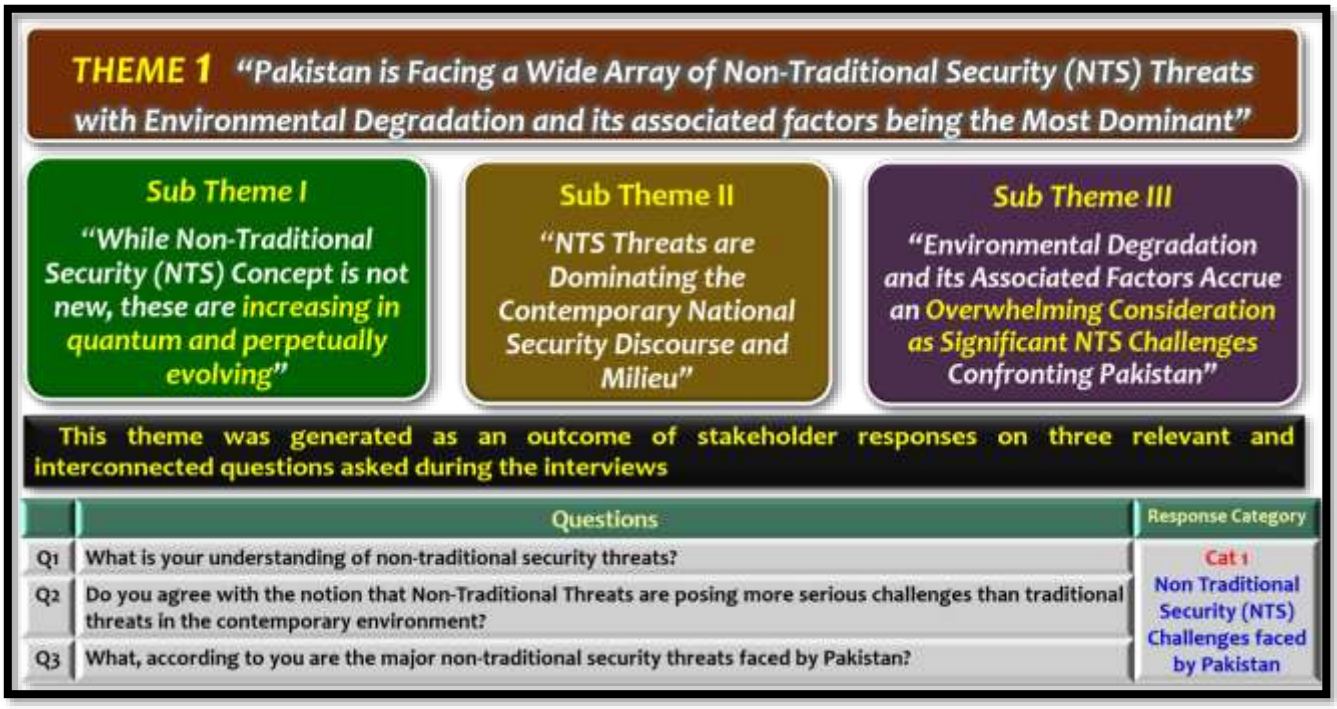

Figure 11 Thematic Analysis - Overview of Theme 1

Environmental Degradation is often used interchangeably with Climate Change both have been collectively considered as the leading and most significant NTS challenge confronted by Pakistan. As a whole, environmental degradation and its associated factors have assumed a whopping 68.1% consideration of the stakeholders as the most significant of the challenges faced by Pakistan. If we consider the allied or associated factors which are somehow triggered, influenced or aggravated by the environmental degradation or its associated factors the tally would be around 84.6%. The issues with relatively lesser or no linkage with the environmental degradation have attracted only around 15.4% of the weightage in relation to their intensity and consequences for Pakistan. This alludes towards the fact that Pakistan is confronting serious environmental challenges which are far more complicated, devastating, serious and threatening to the national security of Pakistan than the other NTS challenges.

Theme 2: *"Environmental Challenges of Pakistan are Serious, Multidimensional, Intricate and Having Multifarious Causative Factors, Extending Well Beyond the Conceptual scope of Climate Change alone"*
This theme was generated based on related questions and responses by the stakeholders on these questions.
"Sub Theme I: Pakistan is Confronting Serious Environmental Challenges entailing Dire Repercussions"
All the stakeholders, irrespective of the academic and professional background expressed unanimous agreement on the assumption that Pakistan is confronting serious environmental challenges.
Sub Theme II : "Pakistan's Environmental Challenges Spread Way Beyond Climate Change Alone"
The fact that the diverse range of environmental challenges faced by Pakistan is far more complex, multifarious and has facets which spill over beyond the scope of commonly used term of Climate Change. For instance, Dr S Shafique Rehman, renowned environmental expert, activist and advisor to the Government of Khyber Pakhtunkhwa expresses his strong criticism on changing the title of the Federal Ministry of Environment, to the Ministry of Climate Change (MoCC) as a "cruel joke" with the nation as he believes that climate change is only amongst a host of environmental issues confronted by

Pakistan. Dr Shafiq also opines that while significance as well as relevance of climate change as a serious global phenomenon cannot be undermined by Pakistan owing to its devastating impact. However, issues like pollution, deforestation, land use change, unregulated urban sprawl, safeguarding of biodiversity, protection of wetlands and national parks, coastal and marine environment, water and sanitation etc must assume similar attention of the governments at federal and provincial level.

Figure 11 Thematic Analysis - Overview of Theme 2

Theme 3: "*Environmental Degradation is the Most Pressing and Existential Non-Traditional Security (NTS) Threat for Pakistan"*

This main theme has been accrued by analysing and synthesizing stakeholder responses to six different yet interconnected interview questions.

Sub Theme I : "Environmental Degradation and Its Associated factors are the Principal Cause of Rising Frequency and Intensity of Natural Disasters in Pakistan"

Environmental degradation and its associated factors are considered as the most significant triggers behind onset of existing natural disasters and Extreme Weather Events (EWEs) in Pakistan. In addition to the causative factors behind onset of disasters these facets act as catalyst in aggravating the intensity and frequency of routine weather events like rains, heats and seasonal floods etc in a particular area. Stakeholders and experts have expressed consensus on this aspect.

Sub Theme II: "Environmental Degradation Via Changing Weather, Temperature and Rainfall Patterns is Seriously Impacting Agriculture and Food Security in Pakistan"

Being an agrarian country, Pakistan is highly dependent on agriculture for its economy as well as food security needs. Over the past few years considerable variations in weather like changing monsoons, heatwaves, smogs and unprecedented hailstorms etc have hit the agriculture sector really hard. Agriculture is the largest sector of the economy, hence decline in the yield of any crop has direct impact on food security as well as economy.

Sub Theme III: "Environmental Degradation has Serious Ramifications and is a Retarding Influence on the economy of Pakistan"

Environmental degradation and its associated factors affect every aspect of a society; however, economy is the most prominent sufferer of its consequences. The phenomenon has far reached consequences for every sector of the economy with some having long term and often irreversible implications. The experts interviewed for the research had a consensus on the devastating impact of environmental degradation on the economy of Pakistan.

Sub Theme IV: "Environmental Degradation is Aggravating the existing Human Security and Socio-Political Challenges for Pakistan"

Owing to its devastating impact across every segment of the society, a country like Pakistan which is confronting crises of varying degree and scope ranging from social, political and human security issues, environmental degradation acts as a catalyst in adding to the complexity and severity of these issues. Experts have expressed serious concerns of the impact of environmental degradation on these dimensions of the Pakistan's security landscape.

Sub Theme V: "Environmental Degradation Poses Serious Challenges to the Employment and Infrastructure of the Armed Forces, thus Having Direct Implications on Pakistan's Military Security"

As discussed earlier, environmental degradation and its facets affect every segment of a society and military is no exemption to it. In Pakistan, military infrastructure is spread over entire breadth of the country, including mountains, deserts, plains and coastal areas. Therefore, the manpower as well as infrastructure of the defence forces including Pakistan Army, Navy and Air Force is prone to serious damages caused by the environmental degradation. One of the most devastating incidents

happened in April 2012 once 140 soldiers and civilians of Pakistan Army died after being buried under an avalanche. The unfortunate incident took place in Gayari Sector, on along the Siachen Glacier (BBC, 2012). The experts interviewed expressed their consensus on the serious implications of environmental degradation on military employment and infrastructure.

Figure 12 Thematic Analysis - Overview of Theme 3

Theme 4: "*There is an Overall Lack of Awareness, Research and Sensitivity Amongst Public in General and Stakeholders in Particular, Regarding Implications of Environmental Degradation on Pakistan"*

This theme was accrued through expert responses on interview questions pertaining to the awareness and overall response towards challenges posed to the country by environmental degradation and responsibilities of various segments of the society in responding to these challenges. Experts were also asked about the quality and quantity of the research on the subject being published by the academia. As a whole the experts were of the view that although there is a growing degree of awareness on the issue, however, "actionable realization" amongst various stakeholders needs concerted efforts at all tiers of governance.

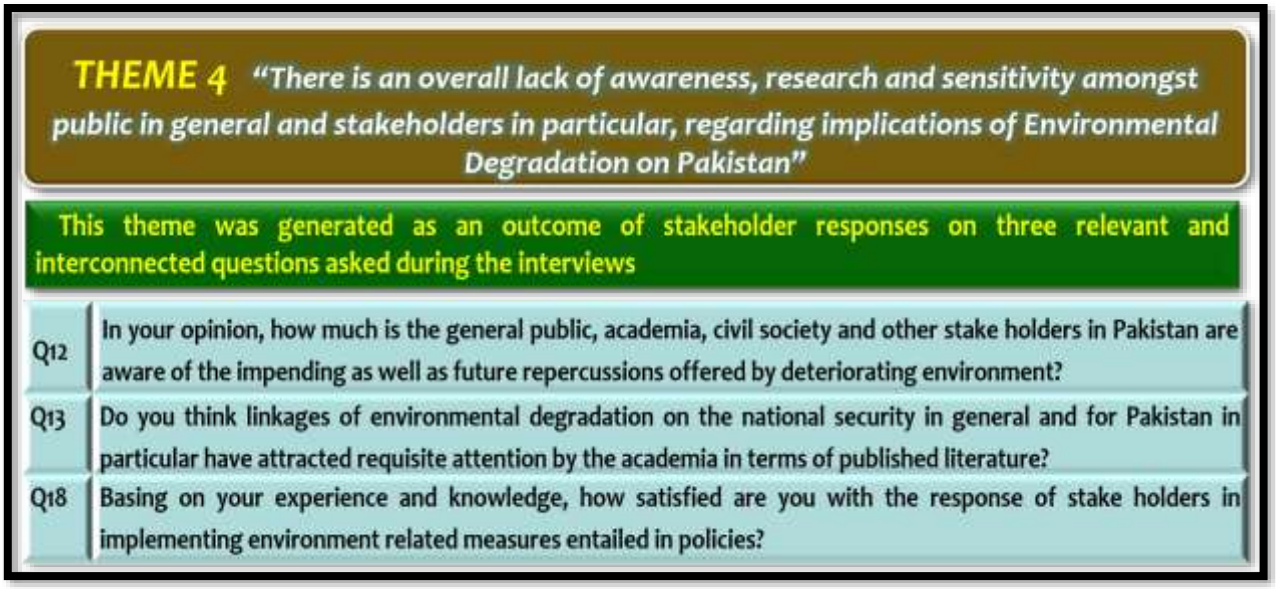

Figure 13 Thematic Analysis - Overview of Theme 4

Theme 5: "*Prevailing Governance Framework of Pakistan Suffers From Serious Inadequacies to Respond to The Monumental Challenges in Quantum and Scope, Posed by Environmental Degradation"*

This theme was generated based on responses by various decision makers, policy formulators, environmental activists, experts and other key stakeholders regarding efficacy of the governance framework in responding to the colossal challenges environmental degradation is posing to the national security of Pakistan. The questions asked were aimed at seeking opinion of the stakeholders on both dimensions of governance framework i.e. legislation, rules, policies, Standing Operating Procedures (SOPs) on one side while the implementation mechanisms including various institutions at federal and provincial level on the other hand.

Sub Theme I: "Devolution of Environment as a Provincial Subject has not been able to Yield the Desired Dividends"

The foremost aspect of the subject being addressed was related to stakeholder responses regarding efficacy and prudence of devolution of environment as a provincial subject instead of federal subject as result of 18th constitutional amendment more than a decade ago. In spite of a division of opinion regarding devolution as beneficial or otherwise, however, stakeholders were generally had consensus that the purpose behind the process is yet to pay desired dividends.

Sub Theme II: "While there is No Dearth of Policies, Core of the Issue Lies in Inability of Pakistan's Environmental Governance Mechanisms in Effective Implementation and Execution of These Policies, Thus Hindering the Process of Mainstreaming the Environment"

This subtheme was based on stakeholder responses regarding the policymaking at federal and provincial level and its on ground implementation. Pakistan's most prominent and internationally acknowledged climate change and development expert, Ali Tauqeer Sheikh who is member of Pakistan Climate Change Council, chaired by the Prime Minister, Task Forces on Climate change, environment and Green financing, Senior advisor at World Bank and Founding Director of Leadership for Environment and Development (LEAD) opines that "a feeble climate governance at federal and provincial level has a direct impact on the magnitude and severity of devastation caused by the changing climate. Inability of the policy makers at national level to anticipate the changing dynamics and evolving thresholds, their inclusion in new policy frameworks for Pakistan to be followed by appropriate actions has led to mere initiation of post facto response". He further goes on to say "First line of defence against any environmental devastation is offered by the local governments and community support groups dealing at grass route level. However, the local governments are absent or non-functional, disaster management authorities mostly nonexistent and the Provincial Disaster Management Authorities lacks the ability to fully support the local governments".

Figure 14 Thematic Analysis - Overview of Theme 5

Theme 6: Recommendations by the Stakeholders "*Pakistan needs to take immediate remedial adaptation & mitigation measures to effectively respond to the challenge"*

This theme is basically formulated through compilation of recommendations proffered by the stakeholders and experts during their respective interviews. Significant recommendations are appended below:-

A National Action Plan Led by a High-Powered, Centralized Coordination Mechanism for Addressing the Existential Environmental Governance Challenges

Environmental degradation and its associated factors have emerged as serious existential challenge for Pakistan. There is a dire need to address the issue at war footings while according highest priority. Some stakeholders have even rendered this recommendation during the course of interviews that environment may be reverted as a Federal subject with Ministry of Climate Change steering the policies and implementation while the provinces mainly on execution end. Some have favored establishment of a high-powered centralized coordination mechanism to deal with environmental degradation.

An Extensive and Consistent Mass Awareness Campaign is Required

Lack of awareness amongst the general public and common masses regarding the seriousness and urgency of environmental challenges faced by Pakistan has been identified as a major issue by almost all experts during interviews. Mainstream and social media has started to give a reasonable amount of attention towards environmental challenges. However, an extensive and consistent mass awareness efforts using mainstream and social media is required to create the desired effects.

Stock Take and Climate Proofing of Development at National and Provincial Level

Mr Ali Tauqeer Sheikh, leading climate change and development expert has shared many valuable recommendations to improve the environmental governance in Pakistan. He is of the view that a national-level stock take exercise needs to be under taken entailing assessment of Pakistan's progress on the process of climate proofing of ongoing and future development.

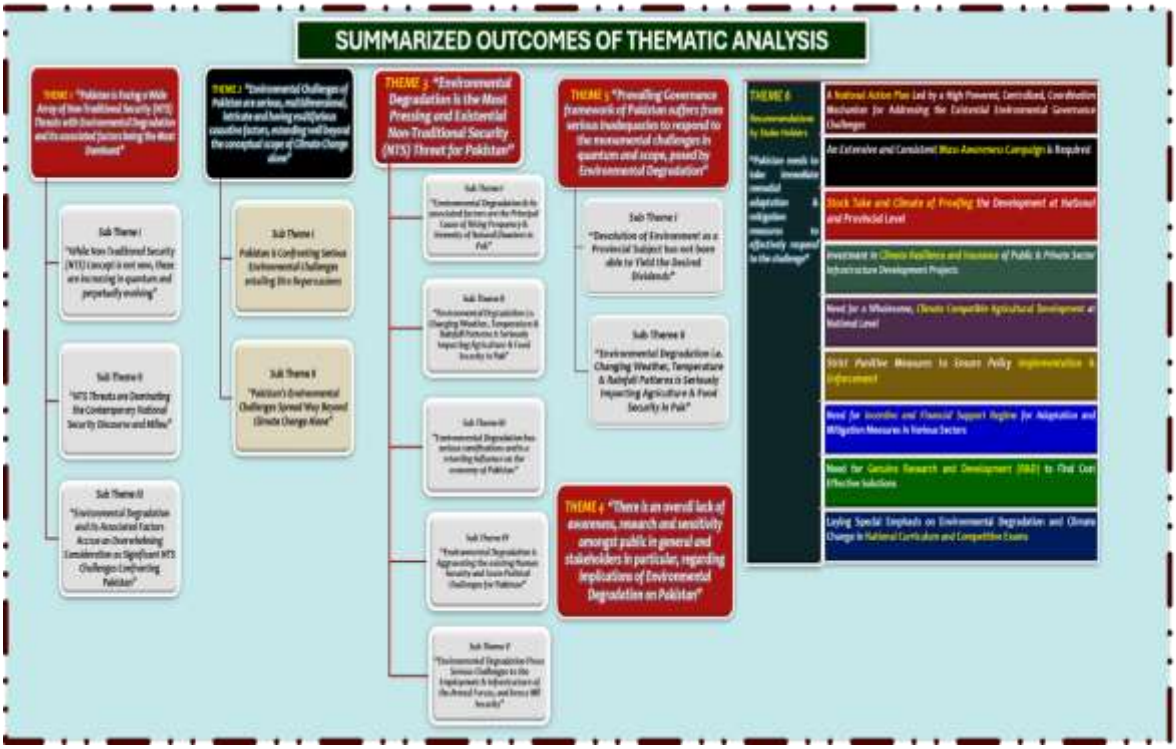

Figure 15 Summarized Outcome of the Thematic Analysis

Need for a Wholesome, Climate Compatible Agricultural Development at National Level

Agriculture is the bedrock of Pakistan's economy being the largest sector which provides labour opportunities to a considerable population. According to agriculture experts like Mr Amir Hayat Bhindara, have recommended expeditious adoption of Climate Compatible Agricultural Development alongside Sustainable as well as Precision agriculture in Pakistan.

Strict Punitive Measures to Ensure Policy Implementation & Enforcement

One of the major drawbacks and perhaps the weakest link identified by almost all the experts is not the availability of policies and SOPs, rather their strict implementation for getting the desired results. Irrespective of how comprehensive and elaborate the policies are unless these are not strictly enforced and implemented, the colossal challenge like environmental degradation can not be effectively responded.

Need for Incentive and Financial Support Regime for Adaptation and Mitigation Measures in Various Sectors

Effective adaptation and mitigation measures to respond the impending and future challenges proffered by environmental degradation and its associated factors need enormous amount of financial resources for true implementation. The government need to introduce attractive financial support and incentive regime coupled with the strict policy implementation to fetch the desired end state.

Need for Genuine Research and Development (R&D) to Find Cost Effective Solutions

As discussed during the course of interviews, most of the experts were not impressed with the quality and output of the research and development happening in Pakistan. Considering the colossal challenges to the national security posed by the phenomenon of environmental degradation it is imperative on the academia, research and innovation centers across the country to accord top priority to innovations in techniques, procedures, instruments, technologies and so on so as to contribute their bid in providing cost effective, localized solutions in various fields of environment.

Laying Special Emphasis on Environmental Degradation and Climate Change in National Curriculum and Competitive Exams

Although these subjects like environmental degradation and climate change etc are finding some space in some curriculum books. However, in order to obtain the desired results a comprehensive, systematic and progressive knowledge about these

challenges, their implications and measures should be declared as a mandatory part of the syllabi at all levels. Apart from the board exams, questions regarding environment and climate change should be made mandatory in all competitive professional exams so that the future leadership of the country is well conversant with the challenges posed by this existential challenge.

Conclusion

The study has endeavored to study the impact and linkages of environmental degradation and its associated factors like climate change, pollution, water scarcity, land degradation etc on the human security situation in Pakistan. Considerable inadequacies in the environmental governance framework of Pakistan have been highlighted by the Key Informants during the course of interviews. Thematic analysis of the interview data has identified "Environmental Degradation" as the most compelling NTS challenge faced by Pakistan. A comprehensive, integrated and well laid out plan with the consent and support of all the stake holders is the only way forward to drive Pakistan out of existential crisis of environmental degradation.

REFERENCES

1. Abbas, S., Kousar, S., Yaseen, M., Mayo, Z. A., Zainab, M., Mahmood, M. J., & Raza, H. (2020). Impact assessment of socioeconomic factors on dimensions of environmental degradation in Pakistan. SN Applied Sciences, 2, 1-16.
2. Adnan, M., Xiao, B., Bibi, S., Xiao, P., Zhao, P., & Wang, H. (2024). Addressing current climate issues in Pakistan: an opportunity for a sustainable future. Environmental Challenges, 100887.
3. Ahmad, M. (Ed.). (2023). Water Policy in Pakistan: Issues and Options (Vol. 30). Springer Nature.
4. Ahrens, J., & Rudolph, P. M. (2006). The importance of governance in risk reduction and disaster management. Journal of contingencies and crisis management, 14(4), 207-220.
5. Akram, N., & Hamid, A. (2015). Climate change: A threat to the economic growth of Pakistan. Progress in Development Studies, 15(1), 73-86.
6. Ali, S., & Shah, N. (2023). ENVIRONMENTAL DEGRADATION: A HUMAN SECURITY CONUNDRUM FOR PAKISTAN. *Strategic Thought*, *5*(1), 97-114.
7. Allan, J., Wagner, L., Templeton, J., & Kosolapova, E. (2024). State of global environmental governance 2023.
8. Anderson, K. (2024, January 15), Does climate change make conflict more likely?, https://greenly.earth/en-us/blog/ecology-news/does-climate-change-make-conflict-more- likely
9. Asghar, A., Umer, M., & Afzaal Afzal. (2024). Effective Implementation of Environmental Laws in Pakistan. *Qlantic Journal of Social Sciences and Humanities*, *5*(1), 9-14. https://doi.org/10.55737/qjssh.739687440
10. Bajracharya, S. R., Mool, P. K., & Shrestha, B. R. (2008). Global climate change and melting of Himalayan glaciers. Melting glaciers and rising sea levels: Impacts and implications, 28- 46.
11. Barnett, J. (2003). Security and climate change. *Global Environmental Change*, *13*(1), 7–17. https://doi.org/10.1016/S0959-3780(02)00080-8
12. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77.
13. Bukhari, M. (2023, November 8), Pollution forces city-wide closures of businesses, schools in eastern Pakistan, Reuters: International Edition, https://www.reuters.com/world/asia- pacific/pollution-forces-city-wide-closures-businesses-schools-eastern-pakistan-2023-11-08/
14. Burke et.,al (2023, February 14), *How Floods in Pakistan Threaten Global Security, https://www.wri.org/insights/pakistan-floods-threaten-global-security*
15. Carter, D, P [@PCarterClimate]. (2023, February 16) *"2023 TEMPERATURE TO-DATE RECORD YEAR: +1.46°C, Record November month: +1.75°C, More fossil fueled evil records"*. X. https://twitter.com/PCarterClimate
16. Dadwal, S. R., & Sinha, U. K. (Eds.). (2017). *Non-traditional security challenges in Asia: approaches and responses*. Routledge.
17. Dagnachew, A. G., Hof, A., Soest, H. V., & Vuuren, D. V. (2021). Climate change measures and sustainable development goals. *PBL Netherlands Environmenta l Assessment Agency, The Hague.*
18. Dr Zia Ul Haque Shamsi. (2023). SIGNIFICANCE OF NON-TRADITIONAL DIMENSIONS OF SECURITY: UNDERSTANDING PAKISTAN'S PREDICAMENTS. International Journal of Contemporary Issues in Social Sciences .ISSN (E) 2959-2461 (P) 2959-3808, 2(4), 1123–1132. Retrieved from https://ijciss.org/index.php/ijciss/article/view/227
19. Dse Souza Boeno, RK, Boeno, RK, & Soromenho-Marques, V. (2015). Climate Change and Securitization: the construction of climate deterrence. Meira Mattos Collection: military science magazine, 9 (36), 595-605.
20. Dupont, A. & Pearman, G., 2006. *Heating up the planet: climate change and security*, Lowy Institute. Australia. Retrieved from https://policycommons.net/artifacts/1345165/heating- up-the-planet/1957313/ on 17 Dec 2023. CID: 20.500.12592/qzn06n.
21. Dupont, B. (2006). Power struggles in the field of security: implications for democratic transformation.
22. Durani, M. Q. (2019). Environmental Mainstreaming in Pakistan: A Public Policy Analysis for Environmental Assessment, [Doctoral Dissertation, National Defence University] Pakistan Research Repository, http://prr.hec.gov.pk/jspui/handle/123456789/20134
23. Eckstein, D., Künzel, V., Schäfer, L., & Winges, M. (2019). Global climate risk index 2020. Bonn: Germanwatch, 1-50.
24. Eckstein, D., Künzel, V., Schäfer, L., & Winges, M. (2019). Global climate risk index 2020. Bonn: Germanwatch, 1-50.
25. Floyd, R., & Croft, S. (2011). EUROPEAN NON-TRADITIONAL SECURITY THEORY: FROM THEORY TO PRACTICE. Geopolitics, History & International Relations, 3(2).

26. Fugard, A. J., & Potts, H. W. (2015). Supporting thinking on sample sizes for thematic analyses: a quantitative tool. International journal of social research methodology, 18(6), 669-684.
27. Galgano, F. A. (2019). The Environment–Conflict Nexus. The Environment-Conflict Nexus: Climate Change and the Emergent National Security Landscape, 1-17.
28. Guest, G., & MacQueen, K. M. (2008). Reevaluating guidelines in qualitative research. Handbook for team-based qualitative research, 205-226.
29. Guest, G., Namey, E. E., & Mitchell, M. L. (2013). Collecting qualitative data: A field manual for applied research. Sage.
30. Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. PloS one, 15(5), e0232076.
31. Haider, F., & Sultan, A. (2022). THREATS FROM CLIMATE CHANGE TO THE MILITARY SECURITY OF PAKISTAN. Journal of Contemporary Studies, 11(1), 34-49.
32. Hussain, M., Butt, A. R., Uzma, F., Ahmed, R., Irshad, S., Rehman, A., & Yousaf, B. (2020). A comprehensive review of climate change impacts, adaptation, and mitigation on environmental and natural calamities in Pakistan. Environmental monitoring and assessment, 192, 1-20.
33. International Federation of Red Cross and Red Crescent. (2021), Pakistan IFRC Country Office Plan, https://www.ifrc.org/sites/default/files/2021-08/Pakistan_Plan_2021.pdf
34. Iqbal, M. P. (2020). Effect of Climate Change on Health in Pakistan: Climate Change and Health in Pakistan. Proceedings of the Pakistan Academy of Sciences: B. Life and Environmental Sciences, 57(3), 1-12.
35. Islam, S. N., & Winkel, J. (2017). *Climate Change and Social Inequality* *. http://www.ejnetindiaresource.org/ejissues/bali.pdfen-
36. Johnson, D. L., Ambrose, S. H., Bassett, T. J., Bowen, M. L., Crummey, D. E., Isaacson, J. S., ... & Winter-Nelson, A. E. (1997). Meanings of environmental terms. *Journal of environmental quality*, *26*(3), 581-589.
37. Johnson, Donald L., Stanley H. Ambrose, Thomas J. Bassett, Merle L. Bowen, Donald E. Crummey, Jeffry S. Isaacson, Daniel N. Johnson, Peter Lamb, Mahir Saul, and Alex E. Winter-Nelson. "Meanings of environmental terms." Journal of environmental quality 26, no. 3 (1997): 581-589.
38. Kakakhel, S *(2019) Climate-Change-as-a-National-security-imperative-for-Pakistan, Nattional Defence University, Pakistan.*
39. Khan, A (2022, December, 4), "Cost to the Climate", https://www.dawn.com/news/1724613
40. Khayam, M. U., & Ahmad, I. (2020). Decentralization of environment in Pakistan: issues in governance. Policy Perspectives.
41. Lee, H., Calvin, K., Dasgupta, D., Krinner, G., Mukherji, A., Thorne, P., ... & Park, Y. (2023). IPCC, 2023: Climate Change 2023: Synthesis Report, Summary for Policymakers. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland.
42. Maarten Hajer & Wytske Versteeg (2006) A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives, Journal of Environmental Policy & Planning, 7:3, 175-184, DOI: 10.1080/15239080500339646.
43. Maertens, L., & Trombetta, M. J. (2023). Climate change at the United Nations Security Council: securitization, climatization and beyond. In Handbook on Climate Change and International Security (pp. 182-200). Edward Elgar Publishing.
44. McIver, L., Beavon, E., Malm, A., Awad, A., Uyen, A., Devine, C., ... & Rull, M. (2024). Impacts of climate change on human health in humanitarian settings: Evidence gaps and future research needs. PLOS Climate, 3(3), e0000243.
45. Mehmood, Z., Hasnain, A., Luqman, M., Muhammad, S., Dhital, N. B., John, A., ... & Awan, M. U. F. (2023). Assessment of Air Pollution Tolerance and Physicochemical Alterations of Alstonia Scholaris along Roadsides of Lahore, Pakistan. Aerosol and Air Quality Research, 23(7), 230038.
46. Mukheed, M., & Alisha, K. (2020). Plastic pollution in Pakistan: environmental and health Implications. *J. Pollut. Effects Contr*, *4*, 251-258.
47. Myers, M. D., & Avison, D. (Eds.). (2002). Qualitative research in information systems: a reader. Sage.
48. Nicholls, R. J., Wong, P. P., Burkett, V., Codignotto, J., Hay, J., McLean, R., ... & Saito, Y. (2007). Coastal systems and low-lying areas.
49. Nisar, N. (2022, June 10), "Climate Induced Migration in Pakistan" https://cscr.pk/explore/themes/energy-environment/climate-induced-migration-in- pakistan/
50. Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International journal of qualitative methods*, *16*(1), 1609406917733847.
51. Purvis, Nigel, and Joshua Busby. "The security implications of climate change for the UN system." Environmental Change and Security Project Report 10 (2004): 67-73.
52. Rapkin, D. P., Avery, W. P., & World, W. P. (1986). *World Markets and Political Instability within Less Developed Countries*.
53. Rauf, Abdul. (2020). Non-Traditional Security Threats to Pakistan.
54. Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian journal of psychiatry, 51, 102083.

55. Salik, K. M., Shabbir, M., & Naeem, K. (2020). Climate-Induced Displacement and Migration in Pakistan: Insights from Muzaffargarh and Tharparkar Districts.
56. Scheffran, J., & Battaglini, A. (2011). Climate and conflicts: the security risks of global warming. Regional Environmental Change, 11, 27-39.
57. Schwartz, P., & Randall, D. (2003). *An Abrupt Climate Change Scenario and Its Implications for United States National Security Imagining the Unthinkable*.
58. Shahid, F. (2021). Climate Change - A Threat to National And International Security: Analytical Study of Pakistan And USA [Doctoral Dissertation, University of the Punjab] Pakistan Research Repository, http://prr.hec.gov.pk/jspui/handle/123456789/20134
59. Sheikh, A. (2022, November 17), "*Reducing Climate Costs"*, Dawn : Pakistan Edition, https://www.dawn.com/news/1721419
60. Siddiqui, Z. A (2023, July 26), Pakistan's first-ever climate change plan unveiled, The Express Tribune: Pakistan Edition, https://tribune.com.pk/story/2427999/pakistans-first-ever- climate-change-plan-unveiled
61. United Nations. High-level Panel on Threats, Change, & United Nations. Department of Public Information. (2004). *A More Secure World: Our Shared Responsibility: Report of the High-level Panel on Threats, Challenges, and Change* (Vol. 5). United Nations Publications.
62. Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & health sciences*, *15*(3), 398-405.
63. Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterising and justifying sample size sufficiency in interview-based studies: systematic analysis of qualitative health research over a 15-year period. *BMC medical research methodology*, *18*, 1-18.
64. World Bank Group. 2022. Pakistan Country Climate and Development Report. CCDR Series;. © World Bank, Washington, DC.
65. Zakaria, F. (2020). Ten lessons for a post-pandemic world. Penguin UK.