



ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL

Available Online: <https://assajournal.com>

Vol. 02 No. 04, Oct-Dec 2024. Page#.1682-1699

Print ISSN: [3006-2497](#) Online ISSN: [3006-2500](#)Platform & Workflow by: [Open Journal Systems](#)**Climate Change as a Security Challenge in a Warming World: A Case Study of Pakistan****Dr. Saeed Ahmed Butt**

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ABSTRACT

Climate change has become one of the most important non-traditional security threats of twenty first century. Whereas traditional security issues are mostly related to wars and territorial disputes, climate change is a problem that impacts human societies by threatening them with environmental degradation, resource depletion, natural hazards, food shortages, migration of populations and economic insecurity. With the rising number and severity of climate-induced disasters, scholars and policymakers have had to rethink the notion of security, which long has focused on state security. Climate related risks are more severe in developing countries than in well-developed ones because of their vulnerability to climate impacts and constrained adaptive capacity. While Pakistan is among the least contributors to global GHGs, it is one of the most vulnerable countries to climate change. Pakistan's socio-economic stability and national security is at greater risk due to increasing temperatures, irregular rainfall, glacier melting, floods, droughts and heat waves. The catastrophic floods of 2010 and 2022 demonstrated serious impacts of climate change on human security, on infrastructure, on agriculture and governance. In this paper, multidimensional nature of climate change as a security challenge is discussed, focusing on case of Pakistan. The study draws on the concepts of environmental security theory, human security theory and securitization theory to examine impacts of climate change on water security, food security, energy security, economic security and national security. It also assesses climate vulnerabilities in Pakistan, Government response to climate change, policy measures and recommendations for increasing climate-resilience and sustainable development. The paper calls for a coordinated, national and international response to climate change and states that it is a holistic security challenge that is not simply an environmental concern.

Keywords: Climate Change, Environmental Security, Human Security, Pakistan, Global Warming, National Security, Water Security, Food Security.

1. Introduction

Climate change is emerging as a key issue in today's international affairs. Human activities, and especially burning of fossil fuels, deforestation and industrialization, have contributed to a significant rise in levels of GHGs in atmosphere, which has caused global warming and climatic changes. The Earth's temperature has, according to Intergovernmental Panel on Climate Change (IPCC) increased significantly since pre-industrial era, affecting many environmental and socio-economic aspects. Climate change has far-reaching consequences, not only on the environment and on ecology, but also on all aspects of life. As climate change has become a growing danger to society, it is gaining more and more attention from both scholars and policymakers. The traditional studies of security were mainly concerned with interstate conflict and military threats. But the security landscape today has broadened to encompass non-

traditional security issues like terrorism, pandemics, cybercrime and climate change. Environmental degradation and climate disasters are jeopardizing the livelihoods, reducing economic growth, increasing social inequalities and adding to political instability. Developing countries have begun to see connection between climate change and security in a new light. These countries are very vulnerable to climate risks due to their limited financial resources, low institutional capacity, fast population growth and reliance on agriculture. Pakistan is an example of this vulnerability. While Pakistan makes minimal contribution to global carbon emissions, it is always one of the countries worst hit by climate change. Pakistan is experiencing a number of climate related challenges such as glacier retreat, water scarcity, extreme weather events, heatwaves, floods, drought and sea level rise. The environmental changes pose risk to agricultural production, food security, health, assets and social stability. Therefore, climate change has become a major threat to national security for Pakistan. This paper discusses climate change as a security threat in a warming world in the context of Pakistan's experience. It explores theoretical concepts of climate security, shed lights on climate vulnerabilities of Pakistan and climate change impacts on national and human security of Pakistan.

2. Literature Review:

Since end of Cold War, linkage of environmental change and security has been gaining increasing scholarly focus. The definition of security in traditional security studies focused mainly on military force, territorial sovereignty, state sovereignty and interstate conflict. But with the addition of non-traditional security threats, the definition of what is a security challenge has expanded. The impact of climate change on national security is increasingly being set within this broader security agenda, since the effects of climate change play out on political, socio-economic, environmental and human dimensions. The literature shows a progressive shift from climate change as an environmental issue to the climate change as a multi-dimensional security issue. The concept of environmental degradation was introduced by some influential scholars such as Mathews (Mathews, 1989). She said that climate change may lead to political and economic instability as much as to more traditional security threats. In like manner, Buzan extended concept of security from military to political, economic, societal and environmental aspects of security. (Buzan B. , 1991) This 'new thinking' offered a useful theoretical framework for subsequent framing of climate change as a security threat. The environmental security literature progressed with efforts of Homer-Dixon (Homer-Dixon, 1999), who studied the connections between environmental scarcity, population pressures, economic conditions, and social conflict. Based on his research, he concluded that indirect environmental degradation is possible, as it may exacerbate resource competition, reduce livelihoods, and lead to social unrest, which can contribute to conflict. The idea that environmental scarcity triggers armed conflict is a widely debated one, though some scholarship has emerged that raises doubts about direct link between environmental scarcity and armed conflict, larger argument that environmental stress can interact with other political and socioeconomic factors remains relevant. Climate change is significant because, according to Barnett (2003), it could affect human welfare and political security as well. This literature does not define climate change as a necessary trigger for armed conflict but rather indirect and contextual pathways. Climate-related hazards can exacerbate inequities, poverty, institutional vulnerabilities, resource constraints and political dissatisfaction. Climate change is therefore becoming increasingly recognized as a threat multiplier as opposed to a threat driver or a determinative cause of conflict. The human security approach is another perspective to gaining insight into climate-security relationship. United Nations Development Programme (UNDP, 1994), expanded definition of security to include protection from threats to human life,

livelihood, dignity and well-being. Human security also embraces economic, food, health, environmental, personal, community and political aspects. Most of these dimensions are strongly impacted by climate change. O'Brien (et al.) suggest that an assessment of climate change must take into account vulnerability and inequality and human development. (O'Brien, 2010) Adverse effects of climate change are not equally distributed among people. Those with less economic means, less institutional protection and higher climate dependency of their livelihoods tend to be more exposed and vulnerable individuals/cultures. For developing countries like Pakistan, where agriculture and livestock, water supply and informal jobs are highly vulnerable to climatic conditions, this observation holds especially true. Adger (et al.) also show that social and institutional characteristics influence vulnerability to environmental change. (Adger, 2003) Thus, impacts of climate change are not only a function of the physical intensity of climatic hazards, but also of adaptive capacity. Climatic events can be compounded by poverty, inadequate infrastructure, lack of access to information, inadequate healthcare and weak governance and become severe humanitarian crises. In case of Pakistan, human security angle is particularly relevant because climate change has multiple interconnected pathways impacting individuals and communities. Flooding may lead to loss of livelihoods and homes, drought to decrease agricultural income and food supply, hot waves can pose health threats, and water scarcity can lead to household insecurity. In this regard, climate change is a threat not only for state but for Pakistani people. This could be analyzed using Copenhagen School-inspired securitization theory. In view of Buzan et al. (Buzan B. W., 1998) and Wæver (Wæver, 1995), an issue is securitized when political agents make it a threat to the very existence of political community and call for "extraordinary" and "urgent" measures. There has been a lot of debate in the academic literature about the use of securitization theory in field of climate change. On the other hand, if climate change is portrayed as a security problem, it may also raise the visibility of the issue, resources for adaptation and resilience, and political agenda for them. Securitization, however, can foster a militarized climate change narrative and leave out development, social and environmental considerations. In opinion of Floyd, environmental security does not necessarily have to be synonymous with national security. (Floyd, 2010) Rather, environment issues must be analyzed in terms of people and values being safeguarded. The subject of security in context of climate change can be the state, communities, ecosystems and individuals. McDonald also notes need to explore politicization of environmental security. (McDonald, 2013) From this point of view, climate change is not only a physical threat, but a security threat as well, because governments, international organisations and political players increasingly portray it as a threat to stability of nations and international relations. Securitization is gaining more salience in Pakistani policy discourse. Climate change has become more and more associated with water security, food security, migration, economic stability, disaster management, national resilience. It is, however, argued in literature that climate-security discourse in Pakistan needs to be balanced between national security and adaptation for human interest. Climate change as a threat multiplier is one of the most swaying arguments in modern literature on climate-security.

Climate change can contribute to vulnerabilities, which in turn can cause conflict and insecurity. IPCC highlights need to consider social, economic, political and environmental vulnerabilities when considering climate risks. ((IPCP), 2022) Climate hazards are especially hard when occurring in settings where poverty, weak state, inequality, fast urbanization and poor infrastructure are present. UNEP also noted growing disconnect between extent of climate risks and coping capacity of vulnerable countries. (Programme., 2023) The impacts of climate hazards are especially severe in developing countries, as they may lack financial and

institutional resources to cope with growing frequency and intensity of these events. This approach of threat multipliers is especially significant for Pakistan. Climate vulnerability is inextricably linked to population growth, urbanization, water stress, poverty, agricultural dependence, governance problems and limited fiscal capacity in country.

Water security is one of the most widely spoken aspects of literature on climate-security in Pakistan. The socioeconomic system of Pakistan is very much reliant on Indus river system for its water requirement to support agricultural activities, domestic use, industry and hydropower generation. According to World Bank (2022), water scarcity and climate change are two significant development challenges for Pakistan. (Bank., 2022) The combination of these varying trends of temperature, precipitation, glacier processes, population growth, groundwater depletion and inefficient water management further raises water-related risks. Indus Basin is also significant as agriculture economy of Pakistan is highly dependent on irrigation water. Increased water availability in certain regions in response to climate change at first due to enhanced glacier and snow melt, but long-term changes in precipitation and cryospheric processes will likely lead to large uncertainty. Glacial Lake Outburst Floods (GLOFs) may be a risk in northern mountain communities as a result of accelerated glacier melt. In addition to environmental sustainability, the issue of water insecurity also has implications that go beyond that. Competition within agricultural-sector, industrial-sector, domestic-sector and energy-sector can be heightened when supply is limited. Water distribution issues can also add to the governance challenges, as they can become interprovincial conflicts. Therefore, water insecurity must be considered as an environmental, economic, developmental and political security challenge. There is a substantial literature on the link between climate change and agricultural productivity and food security in Pakistan. Agriculture is still playing a significant role in the economy, employment, rural living and food security of Pakistan. Hence the impact of temperature and rainfall variations, water availability and extreme weather events can have a far reaching socioeconomic impact. Under IPCC, it has been shown that climate change is already impacting agricultural systems around the world by altering temperatures, precipitation, and through increased frequency of extreme events. ((IPCP), 2022) Periodic occurrence of floods and droughts in Pakistan causes damage to crops, livestock, agricultural infrastructure and rural livelihoods. This is a good example of 2022 floods. Farms and crops were flooded, livestock and standing crops were lost. This led to economic losses of the rural households, who became more vulnerable and thus were faced with food insecurity. There is thus sufficient evidence in the literature to suggest that climate change poses an important threat to food security in Pakistan. The most common adaptation options mentioned are climate-smart agriculture, improved irrigation management, development of drought resistant crops, crop diversification, improved meteorological forecasting and agricultural insurance. The effectiveness of these measures, however, rely on institutional capacity, financing, technology and capacity of small farmers to adopt new measures. Climate-related disasters in Pakistan have been recurring such as extreme rainfalls, droughts, floods, and heatwaves. Flooding in 2010 and 2022 are significant events in literature due to the large scale human and economic impact. The 2010 floods claimed millions of lives and led to a massive loss of life, death and destruction of homes, transport infrastructure, agricultural land, schools and health centers. The flood situation was worse in 2022. The Government of Pakistan and international estimates indicated that millions of people were impacted and vast areas in the country were submerged. The Post-Disaster Needs Assessment by Government of Pakistan, World Bank, Asian Development Bank and United Nations estimated significant damages and losses. In literature, disasters discussed do not only focus on rainfall as a cause of vulnerability. Impacts were

exacerbated by poor infrastructure, poverty, settlement patterns, poor disaster preparedness, poor drainage systems and weak institutional capacity. It contributes to general climate-security argument that climate hazards are security crises as they connect with pre-existing socio-economic vulnerabilities. Another growing strand in the literature of climate-security is related to health security. The impacts of climate change on health have been immediate and severe, such as with heatwaves and indirect including changes in disease patterns, water quality, food availability and nutritional conditions. Extreme heat is a condition to which Pakistan is especially susceptible. Climate change can also have an impact on the distribution and prevalence of vector-borne diseases like dengue and malaria. Floods may cause conditions that are favourable for the transmission of water-borne diseases and affect health service infrastructure, making affected populations more susceptible. The health-security dimension illustrates importance of adopting a multidisciplinary understanding of climate change. The Internal Displacement Monitoring Centre (IDMC) has recorded significant disaster-induced displacement around the world. Floods have displaced numerous people on numerous occasions in Pakistan, especially in rural areas. Migration can create adaptation opportunities and new vulnerabilities. People could move to cities for work and security, but rapid migration can put strain on housing, sanitation, health, water, employment, infrastructure, etc. The literature thus warns against automatic conflict linkage between climate migration and conflict. Governance and socio-economic factors, institutional capacity and ability of the receiving communities to absorb migrants all play a key role in migration outcomes. An issue of economic security is another big one. Climate-related disasters can destroy infrastructure, lower agricultural production, disrupt transportation, damage businesses and raise public spending devoted to reconstruction. If adaptation is not bolstered, long-term economic impacts of climate change may be large in Pakistan, World Bank (Bank., 2022) claims. Economic vulnerability is given special consideration because climate disasters can roll back development progress. There could be a requirement to divert limited resources from education, health and development to emergency relief and reconstruction. The literature has increasingly linked climate change to national security, but generally warns against simple causal links. Interstate war or conflict coming from climate change is not inevitable. Domestic conflict or inter-state war resulting from climate change is not inevitable. Instead, it can influence conditions under which insecurity develops. The regional tensions, economic vulnerabilities, demographic pressures, terrorism, water disputes and governance challenges are already a part of Pakistan's national security landscape. These pressures can be exacerbated by climate change. Enhanced resilience, institutional coordination, scientific capacity, and long-term adaptation are proper answers, rather than militarization. The unequal burden of responsibility and vulnerability in international climate regime is one of key literatures, which have been discussed. Developing nations often claim that they suffer disproportionate climate change effects, while emitting relatively small amounts of climate-changing gases. The case of Pakistan is a typical example of this dilemma of climate justice. While its share of global greenhouse gas (GHG) emissions is still very low, attributed to its limited size, it also is exposed to significant climate-related damages. The floods of 2022 were a great boost to Pakistan's climate diplomacy efforts abroad. Pakistan emphasized the need for climate finance, adaptation assistance, loss and damage mechanisms, and greater international solidarity. In this context, launch of international Loss and Damage Fund is a significant step. But there is ongoing research on important issues of financing, access, institutions and implementation. Climate justice thus brings an international political aspect to Pakistan's climate-security discourse. International financial, technological and institutional assistance is required for the country to be able to respond to the security

challenge through domestic adaptation. Pakistan has formulated a number of policy tools in response to the climate change, such as National Climate Change Policy and subsequent adaptation policy. The country has also initiated large-scale afforestation programs and has enhanced structures for disaster management. However, there are some governance problems as identified in research. These include institutional fragmentation, limited financial resources, weak coordination between federal and provincial governments, lack of local-government capacity, and policy formulation-implementation gaps. The federal system offers both good and bad. Regional and local governments also have important roles in agriculture, disaster management, local development and health and national institutions are also important for international climate change negotiations, national policy coordination and strategic planning. Vertical coordination between federal, provincial and local institutions and horizontal coordination between environmental, agricultural, water, health, energy and security institutions is thus necessary to establish an effective climate governance system. There is a large body of literature which demonstrates the importance of climate change as an environmental, developmental and human-security issue. These concepts have already been well grounded in international scholarship on the links between climate change, vulnerability, human security, resource scarcity, migration and conflict. Studies conducted specifically for Pakistan have also highlighted the vulnerability to floods, droughts, heat waves, water scarcity, loss of agricultural production and economic damage in country. There are, however, a number of issues that need further investigation. First, much of literature on climate vulnerability focuses on individual climate vulnerability components, rather than addressing vulnerability as a whole. Research often targets a single dimension, such as water, agriculture, disaster, health or economic impacts, but does not adequately embed these aspects in a national-security context. Second, literature tends to focus on effects of climate change on the physical environment and conversely, to less frequently consider impacts of intersection of climate risks on current political, socioeconomic and institutional vulnerabilities. Third, while climate change is acknowledged as a threat multiplier, further efforts are required to systematically analyse the interaction of climate change-induced stresses with overall security landscape of Pakistan. Fourth, only a modest focus has been paid to the consideration of human security and national security. Human-security approaches are more oriented toward individual and communities than are national-security approaches. These levels need to be linked to carry out a comprehensive analysis of Pakistan, but not considered as competing frameworks. Several policies have been framed in Pakistan, however policy formulation would not ensure effective local level adaptation. Hence the need for implementation gap is fundamental in assessing readiness of Pakistan in terms of climate security. To overcome these gaps this study proposes to conceptualize climate change as a multidimensional security challenge and discusses consequences of climate change on water, food, health, economic, human and national security of Pakistan.

3. Conceptualizing Climate Change as a Security Challenge:

The concept of security has evolved significantly since end of Cold War. Traditionally, security was associated with protecting state from external military threats. But modern scholars contend that security includes a wider variety of threats that impact on human welfare and social security. Barry Buzan stated that security is not limited to a military matter and that security has political, economic, societal and environmental aspects. Likewise, Jessica Tuchman Mathews said environmental degradation is a serious threat to national and international security. Climate change is seen as a threat multiplier. Climate change does not directly lead to conflict but it compounds existing social, economic and political vulnerabilities. Increased

competition for resources, more migration pressures and weakened governance structures can be caused by rising temperatures, changing precipitation and extreme weather events. The security dimension of climate change can look different in many ways such as the growing incidence of natural disasters, water scarcity, competition over resources, food insecurity and losses, population displacement, climate migration, economic disruptions and poverty, public health emergencies, political instability and social conflict. These interrelated effects show that climate change poses a multi-dimensional security threat and dilemma that needs a holistic solution.

4. Theoretical Framework

Human security was a major theme in 1994 Human Development Report published by the United Nations Development Programme. The concept of human security moves away from state security to individual and community security. All of these aspects are part of human security, which is under threat from personal, community and political climate change, economic security, food, and health. Floods, droughts and heatwaves threaten livelihoods, reduce food production, contribute to the spread of disease and cause displacement. As the former UN Secretary-General Kofi Annan put it “Human security is freedom from fear, freedom from want and freedom to live in dignity”. These goals are directly threatened by climate change. Environmental security theory explores the relationship between environmental degradation and social insecurity and national security. Thomas Homer-Dixon suggested that environmental scarcity may supply a basis for social conflict by limiting access to a vital resource, like water, land and food. Desertification, Water shortages, Land degradation, Biodiversity loss and Extreme weather events are consequences of climate change that exacerbate scarcity of the environment. Environmental security related issues are especially critical in Pakistan as agriculture continues to be heavily reliant on climate sensitive water resources. Securitization theory, created by Copenhagen School, account for the process and conditions that make problems security threats. “When political players represent them as existential threats that need extraordinary measures, then they become securitized,” says Ole Wæver. Securitisation of climate change has become a global trend. Climate change is now seen as a significant threat to stability and development by governments, international organizations and security institutions.

5. Global Climate Change and Security Nexus:

Climate change is now more than ever becoming an integral part of international security studies. Traditionally, security was conceived mostly in military terms, namely as the protection of territorial sovereignty, political independence and the state from armed external threats. The climate-security literature calls into question this limited perspective, highlighting how environmental shifts can pose threats to political and economic stability. The IPCC's assessment highlights vulnerable human communities are already being impacted by climate change and vulnerability is influenced by multiple factors, including poverty, inequality, and poor institution building, migration, and infrastructure. Climate-security nexus thus represents the links between climate change and the conditions that ensure human, societal, economic and state security. It does not have to lead to armed conflict; global warming does not cause armed conflict. Instead, climate change can serve as a “threat multiplier” which can exacerbate current vulnerabilities and make other security threats more likely or more serious.

5.1. From traditional security to environmental security:

The realistic notion of security foregrounded state and its military force. The Cold War focused on national security on military balance, nuclear deterrence, territorial dispute, interstate competition etc. Security agenda was extended beyond Cold War. Environmental degradation,

pandemics, terrorism, transnational crime, migration and food insecurity were more and more identified as non-traditional security threats. This intellectual shift resulted in concept of environmental security. Many scholars, including Mathews (1989), contended that environmental degradation be included in national-security agenda, as ecological shifts can impact on political and economic security. D. Buzan has also taken a broader approach to security analysis than just limited to military sector (Buzan B. , 1991), which extends analysis to political, economic, societal and environmental aspects. Climate change poses a likely the most all-encompassing environment security challenge; it is Global and local, long-term and immediate, environmental and socioeconomic, domestic, transboundary and developmental and strategic. Climate change is different from traditional security threats because of its multidimensional character.

5. 2. Climate Change as a Threat Multiplier:

Today idea of climate change as a threat multiplier is a central feature of contemporary security analysis. Climate change is not a stand-alone driver of insecurity. Rather, it exploits existing vulnerabilities. The underlying vulnerability is a key determinant of climate risks, as identified by the IPCC, and where inequality, poverty, poor governance, lack of infrastructure and marginalisation can amplify effects of climate change. Therefore, security implications of the same climate event may be very different in various countries. A country with a high capacity for finance and infrastructure, insurance programs, emergency services, and wealth can handle a massive flood better than a less developed country with a lack of these. Such a distinction is relevant especially for a developing country like Pakistan. The human-security approach takes a different perspective that is, from state to people security. Human, economic, food, health, environmental, security, personal and community political security can be jeopardized by climate change in almost every major aspect. Climate disasters can wipe out jobs, businesses, infrastructure and home assets. Droughts, floods, heat waves and shifts in rainfall can decrease agriculture production. High temperatures, infectious diseases, malnutrition and contaminated drinking water can also pose a health risk. The effects of climate change increase ecosystem degradation, biodiversity loss, desertification and water stress. During disasters, vulnerable groups may be subjected to violence, exploitation, displacement and insecurity. Climate-induced migration can affect communities and put strains on social institutions. Successive disasters can impose significant strain on governments and public institutions. Climate change is emerging as a human-security issue more than just an environmental issue.

5. 3. Climate Change and Water Security:

One of the most critical linkages between climate change and security is water. The impacts of climate change include changes to Rainfall patterns; Snowfall; Glacier dynamics; River flows; Groundwater and Drought frequency and Flood intensity. Economic and political impacts are possible due to reliance of agriculture, energy production, industry and household use on availability of water. Security concerns are especially important in river basins that cross international borders. In areas where multiple nations rely on the same body of water, alterations in river flow may complicate pre-existing relations between countries. But current studies warn against equating water scarcity with interstate warfare. Conflict can be minimized through institutional, treaty, diplomatic, interdependence and good water governance mechanisms. The more defensible answer is that climate change puts pressure on water-management systems, and properly functioning institutions become more crucial.

5.4. Climate Change and Food Security:

Global food systems are greatly vulnerable to climate change. Increased temperatures may impact crop output, and altered precipitation may result in droughts or floods. Agricultural infrastructure can be damaged by extreme weather events and food-supply chains can be interrupted. It can also lead to increasing food prices, malnutrition, poverty, rural unemployment, migration and social unrest as a result of food insecurity. Climate change and food security, in such a context, are of special relevance for developing countries with a high agricultural dependency rate. Global markets also play a role in the effects of climate change. Increased international trade will ensure that a major crop failure in one area will effect food prices in another, with a growing link between climate security and global economic security.

5. 6. Climate Change and Economic Security:

Climate change has direct and indirect economic costs. Direct costs include destruction of infrastructure; Loss of agricultural production; damage to homes; business losses; and destruction of energy systems. Indirect cost: loss of productivity; decrease in investments; rise in public expenditures; rise in insurance cost; supply chain disruptions and increased poverty. In developing nations, the economic impact may be more devastating as governments have less money to spend on reconstruction. The climate-development framework of World Bank explicitly connects concepts of climate resilience and economic development, noting that there is a need to embed climate adaptation and mitigation in development planning. Climate induced migration is also one of primary drivers of climate-security nexus. Flooding, drought, sea level rise, agricultural decline, water scarcity, desertification and extreme heat are all potential causes of people moving. Migration itself is not a security risk. It can in fact be a means of adaptation. When migration is sudden and fast and the receiving areas provide inadequate housing, employment, health care, water, sanitation and education, problems arise. This can therefore impose a strain on Individuals, communities, cities and governments due to climate-related displacement. Interactions between climate vulnerability, migration, poverty, inequality, conflict and weak institutional capacity are recognized as an important aspect of the current climate risk by IPCC.

5. 7. Climate Change, Public Health, Political Stability Security:

The health impacts of climate change. Global health security is more and more impacted by climate change. The most significant risks are those of heat-related mortality; malaria and dengue; Water-borne disease; malnutrition; respiratory illness and mental-health effects after disasters. The heatwaves especially are of great importance as they may directly push vulnerable populations beyond their physiological tolerance limits. Floods may also create a higher risk for disease by affecting drinking-water systems and damaging health-care facilities. The health-security aspect illustrates the need to engage health departments, urban planning, disaster-management bodies, local governments, as well as the environmental ministries in climate policy. Climate change can have indirect impacts on political stability. If governments are not able to offer sufficient disaster assistance, water, food, employment, housing, and public services, then there can be an increase in public dissatisfaction. The relationship may be expressed as climate shock, socioeconomic disruptions, public grievances, stresses on institutions, and political instability. However, there is no literature that backs a simple proposition that inevitably climate change creates political conflict. While there is much literature relating climate variability to some types of organized violence, evidence is not yet sufficient to make a straightforward statement about direct link between climate change and major armed conflict, IPCC adds. This qualification has significance for a rigorous academic study of subject. Climate change causes armed conflict. Climate-conflict relations continue to be one of most discussed fields of climate-security research. Homer-Dixon posited that

competition for resources and socioeconomic disruption may be factors in generation of environmental scarcity and its potential for contributing to conflict. (Homer-Dixon, 1999) Subsequent studies have yielded a more complicated picture. Conflict risks may rise in certain settings with the impact of climate change, but in other cases, political institutions, economic inequalities, state capacity, governance, historic grievances, and ongoing conflicts are more significant. IPCC thus identifies a stronger evidence linkage between climate variability and some types of low intensity organised violence than to major civil wars.

5.8. Climate Change and Energy Security:

Energy security is closely linked with climate security. Extreme weather events, such as floods, storms, droughts and heatwaves, pose a risk to energy infrastructure in context of climate change. Meanwhile, reliance on fossil fuels leads to greenhouse-gas emissions. This creates a paradox in policy making: how to provide energy security, while simultaneously reducing dependence on high-carbon energy, to advance climate security. Renewable energy has potential of tackling both challenges, by reducing fossil-fuel dependence, Improving energy diversification and Reducing emissions and Increasing domestic energy production. This has led to adoption of solar, wind, hydropower and other renewable energy technologies as an integral part of climate-security measures. International relations are growing more and more affected by climate change. Implications are climate diplomacy, climate finance, loss and damage, migration, water governance, food security, energy transition and critical resource competition. International justice is another aspect of concern in context of climate change. Historically, countries that have emitted high amounts of greenhouse-gases are not always the ones that are the most vulnerable to climate change effects. Many developing countries thus insist that climate financing and technology transfer should play a key role in international response. It is of particular concern to Pakistan.

6. Climate Change in Pakistan: An Overview:

Pakistan is a specific context of study for the climate-security nexus as it is most vulnerable to climate change while having comparatively less historical contribution to global GHGs emissions. Pakistan is listed in most vulnerable countries to climate change by World Bank and calls for massive investment on climate change resilience. Geographically Pakistan is vulnerable due to its diversity, dependence on Indus Basin, agriculture dependence, rapid population growth, urbanization, poverty, lack of fiscal resources, poor infrastructure vulnerability and exposure to extreme weather events. The climate risks are not equally distributed across the country. Climate insecurity in different geographical areas takes different shapes. Pakistan is vulnerable to various climate hazards due to its geographical characteristics. Himalaya, Karakoram and Hindu Kush regions have large areas of glaciers and are sensitive to Glacier retreat, Glacial lake outburst floods, Flash floods, Landslides and Changing snowfall in Northern mountainous areas. The following listed risks are especially prevalent in agriculture regions of Punjab and Sindh: agricultural losses, changing monsoon pattern, heatwave and water stress. The problem of drought, water scarcity, desertification and extreme temperature are serious problems in Balochistan. Sea-level rise, coastal flooding, salinity intrusion, and degradation of coastal ecosystems are all threats to coastal areas of Sindh. This geographical diversity demands for Pakistan a multi-dimensional and regionally differentiated climate-security approach.

6.1. Rising Temperatures and Heatwaves:

More Higher Temperatures and Heatwaves: The incident of extreme heat has become more intense in Pakistan. Heatwaves impact human health, agricultural productivity, livestock, labour productivity, electricity demand and water usage. Urban areas in particular are at risk due to

the high density of buildings, few plants, air pollution and poor planning, which can exacerbate exposure to heat. The devastating floods of 2022 were preceded by a heatwave, which was a striking example of climate extremes that Pakistan faced. Major human and economic losses were blamed by World Bank on heatwave and subsequent floods in the year. The flood events are among one of the most severe climate hazards in Pakistan. The country has several types of floods: Riverine floods, Flash floods, Urban floods, Glacial lake outburst flood and Extreme monsoon flood. The 2010 floods were a national disaster and 2022 floods illustrated ongoing and growing levels of vulnerability. World Bank estimates that the disaster of 2022 resulted in over US\$30 billion in damages and economic losses, affecting millions of people. The same assessment indicated that over 1700 people were killed and over 8 million displaced. The facts show the need to view flooding as a security threat and not just a natural disaster. This is especially critical in Pakistan due to the reliance on irrigated agriculture for the nation's economy. Some possible ways climate change impacts water security include Changing rainfall, Glacier and snowmelt, Rising temperatures, Evaporation, Drought and Groundwater depletion. It is not just "too little water. Pakistan is witnessing hydrological variability, in form of extreme water abundance and extreme water scarcity at various times and places. Water storage, conservation, efficiency in water usage, groundwater management and integrated basin management are critical elements to national resilience. Water Resources is also a key sector identified in Water Resources section of World Bank's Pakistan climate-development work, as a sector that needs adaptation and resilience investments. Pakistan's rural life relies heavily on agriculture and its economy. Climate change impacts agriculture by increasing temperatures; water scarcity; flooding; drought; shifting growing seasons; crop diseases and livestock stress. The impact goes beyond the farmer. Agricultural losses can impact on Food prices, Household income, Poverty, Rural employment, Migration and National economic stability. Therefore, the focus on climate-resilient agriculture must be a part of Pakistan's national-security policy. The northern glaciers of Pakistan are strategically important due to their contribution in water resources of Indus Basin. The impacts of climate change are a complex mix of risks. Accelerated melting in short term may lead to increased runoff and flood hazards. Changes in glacier mass and snowpack can impact water available downstream, as well as the time of its availability. Another major issue for vulnerable mountain communities is glacial lake outburst floods. Hence, Pakistan needs The monitoring of glaciers; The establishment of early-warning systems; Hazard mapping; Community preparedness; Resilient road and bridge; and Risk-sensitive development planning.

6.7. Climate Change and Public Health in Pakistan:

The impacts of climate change pose several health risks including heat, floods, malnutrition, vector-borne diseases and Health care infrastructure. High temperatures cause greater heatstroke and cardiovascular stress. Flooding may affect drinking water resources and lead to rising levels of infectious diseases. Losses in agriculture may contribute to food insecurity and malnutrition. Dengue and Malaria are diseases that can be affected by changes in temperature and precipitation, changing their geographical distribution. Hospitals, clinics, roads and medicine-supply systems are vulnerable to damage in Healthcare infrastructure during Disasters. The health dimension then reinforces the need to take an integrated view of human security as a lens on climate change.

6.8. Climate-Induced Migration and Displacement:

There have already been large-scale migrations in Pakistan due to climate disasters. Floods destroy houses; agricultural land; livestock; roads; schools and health facilities. Displaced people tend to flock to nearby towns and cities. The impacts of climate migration in cities and

towns can exacerbate housing shortages; informal settlements; unemployment; water stress; sanitation problems; public-health risks if cities do not have sufficient capacity. National urban policies and social-protection policies must thus address climate migration.

6.9. Pakistan and Climate Justice:

Pakistan's role in international climate system makes climate justice an important talking point in Pakistan. Pakistan has contributed a relatively small portion of global greenhouse-gas emissions but is at heightened risk from climate change. World Bank explicitly pointed out this vulnerability in assessment of Pakistan's climate development challenge. This has helped Pakistan to prioritize international climate finance; adaptation funding; loss and damage; Technology transfer; Capacity building and International cooperation. So Pakistan's climate diplomacy is not just about environmental vulnerability but also international justice and development. Pakistan has formulated several climate-policy tools such as its National Climate Change Policy and revised Nationally Determined Contribution. The World Bank's climate knowledge resources list National Climate Change Policy, National Disaster Risk Reduction Policy and Pakistan's updated NDC as country's key climate policies. (Bank., Pakistan: Country-specific climate change resources, 2022)

7. Climate Change as a Security Challenge in Pakistan:

Climate change has become a multi-faceted security threat for Pakistan, not only in natural environment, but also in aspects of water availability, food production, public health, economic stability, migration, infrastructure and national resilience. The geographic positioning, reliance on climate-sensitive agriculture, high population growth rate, urbanization, water scarcity, fiscal constraints and susceptibility to floods, drought and heatwaves, and glacier-related hazards make Pakistan particularly vulnerable. Under related scenarios, World Bank has estimated that the impact of climate risk, environmental degradation and air pollution on Pakistan's GDP could be 18-20% by 2050 which may jeopardize country's development and poverty eradication goals. Security can not be viewed as a military issue of climate change. Instead, climate change acts as a threat multiplier. It can aggravate existing economic, social, environmental and political vulnerabilities and exacerbate other security challenges.

7.1. Climate Change and National Security:

The traditional national security is concerned with military threat, territorial integrity, sovereignty, and interstate conflict. Contemporary security studies, however, increasingly have come to regard environmental change as a security issue because of environmental disruptions' ability to negatively affect state's capacity to maintain economic and social stability. The impact of climate change on national security for Pakistan may be via a series of interlinked processes: Climate change affects environment, which leads to resource insecurity, economic and social vulnerability, displacement and instability and pressure on state institutions. But, it doesn't necessarily mean that there is an automatic link between climate change and conflict. Instead, pressures from climate change compound existing vulnerabilities. A flood, for instance, becomes a significant security issue when it wipes out agriculture output, displaces millions of people, damages infrastructure, spreads disease, diminishes government income and adds strain to already scarce public resources. The World Bank also considers climate resilience as a key component of safeguarding the country's economy and alleviation of poverty from climate change.

7.2. Water, food and Economic Security:

In Pakistan, water security is likely the most strategically crucial part of climate security. The Indus River system is crucial for Pakistan's agriculture, economy, and energy supply. Precipitation changes, rising temperatures, glacier/snow changes, droughts, and extreme

precipitation are all part of the hydrological cycle impacts of climate change. This results in two conflicting problems – too much water at certain times and too little water at other times. Severe flooding can occur during extreme rainfall and monsoon events in Pakistan, while droughts and water shortages can also occur during prolonged dry spells, the pressure on groundwater resources can be higher during periods of heavy rainfall and/or high temperature; the use of water for irrigation becomes higher during periods of increased temperature, and during extreme weather events, there can be a greater demand for groundwater by competing users such as agriculture, domestic, industrial and energy sectors. There are consequences to water insecurity other than for water management. Reliable water supply is vital to agriculture, hydropower is reliant on flows and millions of people rely on water for drinking and sanitation. Therefore the long-term impact of water stress may impact Pakistan's political, public health, economic and food security. Water must then be used as a national security strategic resource and not just an environment resource.

The agricultural sector is very temperature, rain, irrigation and soil dependent and is a major concern for food security in the context of climate change. Excessive heat can decrease crop productivity, flooding can wipe out standing crops and farm equipment. Droughts may decrease the availability of water and productivity of livestock. The planting and harvesting can also be affected by climate variability. This vulnerability was seen in the 2022 floods. The official Post Disaster Needs Assessment (PDNA) estimated damages of over US\$14.9 billion, and economic losses of approximately US\$15.2 billion, and a minimum cost of US\$16.3 billion for resilient rehabilitation and reconstruction. There were also indirect consequences other than the immediate losses of crop. Roads, irrigation systems, food storage facilities, livestock, markets and rural houses were burned, thus disrupting the whole agricultural value chain. Food insecurity, in turn, can then lead to higher food prices, rise in household poverty, Malnutrition, Rural unemployment, Migration, increased demand for government subsidies and Social and political pressures. So, climate change can make an environmental disaster a food-security issue for the nation. Climate change poses a significant threat to Pakistan's economy-security issues. Climate disaster costs come in two forms, direct and indirect. Direct costs include destruction of homes, roads, bridges, schools, hospitals, agricultural land, power systems and businesses. Indirect costs encompass lost employment, decreased agricultural output, interrupted supply chain, decreased investment, growing government spending, and lower tax revenues. According to World Bank, climate-related risks could seriously jeopardize Pakistan's development path and its poverty reduction. This forms a very challenging cycle.

7.5. The 2022 Floods as a Security Case Study:

The floods in 2022 are the best examples of climate change as a multidimensional security threat in Pakistan. The disaster had a significant impact across the country and resulted in significant humanitarian, economic and infrastructure impacts. The official post-disaster estimate of damages was over US\$14.9 billion, and of economic losses about US\$15.2 billion. World Bank estimated that floods and preceding heatwave had claimed over 1,700 lives and displaced over 8 million people with damages and losses reaching more than US\$30 billion in broader assessment cited by World Bank. (Bank, 2022) There are a number of categories of security implications, such as: Millions of people lose their homes, livelihoods and livestock, or access to essential services. Crops and farmland were greatly impacted. The risks of contaminated water, infectious diseases, malnutrition, and poor access to health care increased due to flooding. Infrastructure and productive assets were lost. Massive migrations were required, putting additional strain on communities and cities. The disaster tested government institutions and disaster-management systems to the limit. The 2022 floods are

thus a reminder of the need to think of climate change as multi-sectoral security issue, rather than just an environmental issue.

7. 6. Heatwaves, Health Security & Migration:

Pakistan is also very vulnerable to acute climate conditions. Heatwaves can be serious threats to human health, especially for older people, children, outdoor workers, low income communities and those without access to cooling. The security implications include heatstroke and heat-related mortality. Lower productivity, Higher electricity consumption, Stress at the hospital, losses in agriculture, deaths of livestock and higher water usage. Heat thus brings together links of environmental security, health security, energy security and economic security. Concrete surfaces, low vegetation, overcrowding, air pollution and poor urban design can exacerbate exposure to heat in urban areas. The Himalaya, Karakoram and Hindu Kush mountain systems of Pakistan have a very wide distribution of Glaciers. These glaciers provide water resources to the country and are subjected to climatic changes. Due to accelerated melting and alteration of glacial conditions, the potential for Glacial Lake Outburst Floods (GLOFs) exists that could impact communities, road bridges, hydropower sites and other infrastructure in northern region of Pakistan. This has been a complicated security scenario. Increased melting may lead to more water available and more flood risk in short term but glacier mass changes and precipitation changes can bring uncertainty to water supplies in long term. Mountain communities are especially vulnerable as many settlements are under-resourced in terms of infrastructure and emergency-response. Disasters caused by climate change can lead to temporary or permanent displacement. Floods may cause damage to houses, crops and drought and environmental deterioration may harm the livelihoods of rural population. Individuals will then gravitate to urban areas to seek employment, refuge, schooling, medical care and other services. Housing, employment, water, sanitation, healthcare, education and urban infrastructure are all stressed by climate migration. The floods of year 2022 were a stark reminder of scale of displacement due to disasters in Pakistan. According to World Bank, over 8 million people were displaced after the disaster. Don't consider migration as a direct source of conflict. RPD can worsen existing socioeconomic conditions, however, especially in areas of already frail urban infrastructure. The poorest households are most likely to be affected by climate change, as they have limited resources to bounce back from climate disasters. A rich family can repair a broken house, buy new livestock, get insurance, or move temporarily. The poverty-stricken family can find it difficult to pay back a debt and may end up losing their means of survival. For this reason, the process of climate adaptation must be tied with poverty alleviation and social protection in Pakistan. The World Bank is particularly clear about the need to focus on people-centred adaptation and climate resilience to safeguard development and poverty reduction gains. Climate change is also a threat to Pakistan's energy system. Hydropower relies on water supply and periods of extreme heat drive up electricity consumption for cooling. Meanwhile, climatic events like floods can cause harm to transmission facilities and interfere with power distribution. Renewable energy provides an important opportunity to address both climate and energy security. Solar energy, Wind energy, Hydropower and Biomass have huge potentials in Pakistan. This shift to diversification of renewable energy supply may help to decrease reliance on imported fossil fuels as well as help achieve mitigation goals. So, more and more, policy on climate change and energy security should be linked up.

7.7. Climate Justice and Pakistan's International Security:

Pakistan is one such country that exemplifies the global climate-justice dilemma. The contribution of Pakistan in global GHGs emission rate is very small, but the population is

exposed to many climate risks. The World Bank's report on devastating floods in 2022 clearly mentioned Pakistan's vulnerability, even though it accounts for less than 1% of global GHG emissions. This imbalance is now a part of Pakistan's foreign policy posture, as it made its presence felt in international climate diplomacy. Pakistan has, under its priority, focused on climate finance, Adaptation finance, Loss and damage, Technology transfer, Capacity building and International cooperation. The climate-security issue thus goes beyond domestic policy and takes on the character of international political economy and global governance.

8. Government Responses and Climate Policies in Pakistan:

The overall state of Pakistan's response to climate change has been transformed from a rather environmental and disaster management approach to more comprehensive approach that includes climate adaptation, mitigation, disaster risk reduction, sustainable development, climate financing and climate security. This change arises as a result of increasing vulnerability of Pakistan to various flood effects, drought, heat waves, water scarcity, glaciers-related hazards etc. which are commonly linked to climate change. Pakistan's climate policy has been more focused on adaptation and resilience due to its relatively small contribution to global GHG emissions and high vulnerability of country to climate change, while keeping mitigation and international climate diplomacy as important components.

8.1. National Climate Change Policy:

A significant institutional outcome was the adoption of Pakistan's National Climate Change Policy (NCCP) in 2012 and its update in 2021. The policy offers a general framework for mitigating climate-related risks in water, agriculture, forestry, biodiversity, energy, health, disaster management and vulnerable communities sectors. The new policy acknowledges the danger of climate change to Pakistan's economic development and human security. The focus on adaptation is also significant as Pakistan's vulnerability is rooted in its climate-dependent economic activities such as agriculture and water resources. Key policy priorities are improving climate-resilient infrastructure, strengthening water management, promoting climate-smart agriculture, protecting forests and biodiversity, improving disaster preparedness, developing climate-resilient urban areas, strengthening climate information and early-warning systems, Promoting renewable energy and increasing institutional coordination. The policy is thus an important attempt to put climate change on the agenda of national development planning. Given the fragility of state of adaptation, Pakistan has started focusing more on adaptation as many of impacts of climate change are now unavoidable. A National Adaptation Plan (NAP) is a plan to reduce vulnerability and increase resilience. Climate change poses a threat to different parts of Pakistan in varying ways, making adaptation a crucial aspect of Pakistan's response. The glacier hazards, GLOFs in Northern Pakistan; Deviation from rainfall patterns and water availability in agricultural areas and Sea-level rise and saltwater intrusion in coastal areas are the threats in these areas. A rise in extreme heat and flooding for urban centres. The adaptation approach thus demands a locally adapted rather than a country-wide solution.

8.2. Nationally Determined Contributions (NDCs):

As per the Paris Agreement, Pakistan has presented its Nationally Determined Contributions (NDC) which include its climate commitments. The National Development Commissions (NDCs) of Pakistan have two parts, adaptation and mitigation. The nation's mitigation plan focuses on renewable energy, energy efficiency, transportation, forestry, waste management, and other areas. But Pakistan's climate pledges are seriously constrained due to a major financial barrier. Many proposed mitigation and adaptation actions depend upon access to international climate finance, technology transfer, and capacity-building support. This is a key point of Pakistan's climate diplomacy: Pakistan wants to balance its climate action with expectations from others.

8.3. Ten Billion Tree Tsunami Programme:

The Ten Billion Tree Tsunami Programme is one of the most prominent environmental initiatives in Pakistan aimed at reforestation and afforestation. The programme is based on Billion Tree Tsunami programme of KP. The afforestation and ecosystem restoration activities can help achieve Carbon sequestration, soil conservation, watershed protection, biodiversity conservation, reduction of land degradation and improved livelihoods. Tree planting initiatives should not be seen as a replacement for fossil fuel emissions reduction, however. Their effectiveness relies on longevity of planted trees, species selection, and ecosystem restoration and monitoring.

8.4. Climate-Resilient Water Management:

Perhaps the most strategically significant part of Pakistan's climate policy is water. The Indus River system is vital for the nation's agriculture, water supply, hydropower generation and industrial activities. Climate change poses a risk to this system via impacts of changing precipitation, rising temperatures, glacier dynamics, droughts, floods, and increased water demand. The Government responses are then improving irrigation efficiency, promoting water conservation, developing water-storage capacity, improving watershed management, modernizing irrigation infrastructure, monitoring groundwater and developing flood-management systems. From a national-security standpoint, the impact of water stress on agriculture, energy production, rural livelihoods, and inter-provincial relations could pose a threat if the stress is prolonged.

8.5. Climate-Smart Agriculture:

Agriculture is very vulnerable to climate variability. The government policies are emphasizing increasingly on climate-smart agriculture as a tool to ensure food security and rural livelihoods. These can be drought resistant crops, heat-tolerant crop varieties, efficient irrigation, drip/sprinkler irrigation, improved agricultural forecasting, crop diversification, climate insurance, and digital agricultural information services. Such measures will be of some help to farmers to adjust to the changing climatic conditions and still remain productive. However, adaptation policies need to be accessible to small farmers. Climate-smart agriculture would be limited to larger agricultural producers if credit, technology and extension services were not available.

8.6. Renewable Energy and Mitigation:

While adaptation has started to dominate Pakistan's climate policy, a greater emphasis is now being placed on mitigation. Pakistan has huge potential for Solar energy, Wind energy, Hydropower, Biomass and other renewable technologies. Growth in renewable energy can help to solve energy and climate issues at same time. Energy is a strategically important area in Pakistan, as it has been facing acute energy crisis due to dependence on imported fossil fuels. This would lower the reliance on imported fuels and also the amount of greenhouse-gas emissions. Therefore, climate policy and energy-security policy can complement and support one another.

8.7. Electric Vehicles and Sustainable Transportation:

Another sector, where Pakistan has tried to include climate factor in transportation is in infrastructure. EV Policies are designed to promote use of alternative, cleaner transportation methods over traditional gas or diesel-powered cars. The potential benefits include reduced urban air pollution, lower oil-import dependence, Reduced greenhouse-gas emissions and improved energy security. But success in EV depends on charging infrastructure, electricity supply, electricity cost, public transportation planning and the sustainability of electricity generation.

8.8. Climate Change and Urban Policy:

The process of urbanization introduces new climate vulnerabilities. Urban flooding, extreme heat, Air pollution, Water shortages, lack of greenery and poor drainage are the issues faced by large cities in Pakistan. Climate resilient urban planning is thus gaining in significance. The measures that should be taken in response to climate changes should involve Expansion of urban forests, Protection of wetlands, Improved drainage, Heatwave early-warning systems, Climate-resilient buildings, Better public transportation and Increased green spaces and Improved solid-waste management. Climate change should be integrated into urban development, and public-health planning, as the Karachi heat wave experience shows.

8.9. Climate Finance and International Diplomacy

The country's internal resources are not adequate to meet demands of adaptation and mitigation to climate change. Hence, international climate finance funding plays a significant role in Pakistan's climate action plan. Pakistan has called for the following: Increased adaptation finance, Loss and damage financing, Technology transfer, Capacity development, Concessional financing and Greater international responsibility from high emitters. The concept of climate justice is closely linked to the position of Pakistan: it is only fair that countries which have contributed relatively little to the history of greenhouse-gas emission should not have to bear disproportionate climate-related costs. The floods in 2022 enhanced Pakistan's international climate diplomacy and also raised profile of issue of loss and damage in the international arena.

8.10. Climate Change and National Security:

One of the major achievements is the growing understanding that climate change is a national security issue. The impact of climate change should, therefore, be taken into account in national security evaluations, especially in Water security, Food security, Energy security, Border regions, Disaster preparedness, Migration and Critical infrastructure. But, this does not imply that the climate change should be militarized. The better way is to embed climate considerations in strategic planning, and to keep a firm focus on the human security and sustainable development.

9. Conclusion:

Climate change is one of today's biggest security threats. The effects of it go beyond the environment and include economic security, human welfare, public health, food sources, water supplies and national security. Pakistan is a climate vulnerable developing country where the increase in temperatures, glacial melting, flood, drought and extreme weather events pose high risks. The climate change impacts from the devastating floods of 2010 and 2022 have shown how climate change can reverse development progress, stress governance systems, and affect human security at a macro level. Pakistan is an illustration of how climate change poses a threat not only to environment but a multifaceted security threat that needs holistic solutions at governmental, societal and international levels. To tackle climate risks, effective adaptation strategies, resilient infrastructure, sustainable resource management and international cooperation are necessary. In conclusion, it is essential to acknowledge climate change as a major aspect of national security and sustainable development strategies in Pakistan to ensure climate security. Government's climate change action in Pakistan has grown significantly, but it is insufficient to extent of the country's vulnerability. Climate policy should be more than just the responsibility of environmental institutions. It should be incorporated into national development, economic planning, water management, agricultural policy, public health, energy security, urban planning and national security strategies. The most significant argument for your research paper is that while there is a growing recognition in Pakistan of climate change as

a security challenge, impact of climate change is limited by institutional fragmentation, insufficient funding, poor implementation and a lack of adaptive capacity. Climate governance must be strengthened, not only by introducing more policies, but by coordination, predictable financing, increased local institutions, scientific capacity and incorporation of climate risk into national security planning.

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