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CLIMATE CHANGE GOVERNANCE IN PAKISTAN: POLICY FRAMEWORKS, INSTITUTIONAL ROLES AND IMPLEMENTATION CHALLENGES

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ABSTRACT

Pakistan is one of the most climate vulnerable nations in the world, which is experiencing escalating risks of floods, droughts, and higher temperatures. The disastrous floods of 2022 and 2025 demonstrated the extent of this vulnerability and displaced millions of people, resulting in massive economic losses. The country, in turn, has devised several policy frameworks to respond to climate change but gaps in implementation, coordination, and resource allocation persist. This research used a qualitative and descriptive design which relied on secondary data gathered through national policy documentation, government reports, and international climate agreements. Data analysis was conducted to assess the effectiveness of policy, institutional arrangements and sectoral challenges in major sectors such as agriculture, water, energy, health and infrastructure. Analysis indicates that some of the significant frameworks introduced by Pakistan include the National Climate Change Adaptation Policy 2021 and the Nationally Determined Contribution 2021. There is an improvement in the renewable energy projects, afforestation, and community-based adaptation. The climate financing is severely inadequate, standing at less than 0.5 percent of GDP as opposed to the recommended 2-3 percent. The outcome of institutional fragmentation of various agencies has been poor coordination and sluggish implementation. The provincial governments have limited technical capacity, a poor monitoring system that only monitors a small percentage of the projects. The research concludes that despite the improvement in the policy development of Pakistan, the implementation of the policies remains weak, owing to the institutional inefficiencies, financial constraints, and capacity gap. It is necessary to strengthen the institutional coordination, climate investment, monitoring, community participation, and access to international finance and technology. The private sector should also be actively involved; regional co-operation should be strengthened and capacity building in all provinces should also be enhanced to improve climate governance.

Keywords: *climate change, vulnerabilities, adaptation, climate policy*

INTRODUCTION

Climate change stands as the most urgent issue of the 21st century. It is not only harming ecosystems and depleting natural resources but is also inflicting significant damage on economies, particularly in developing regions. Moreover, human lives are being jeopardized due to heatwaves, floods, and storms. Pakistan is one of the country's most heavily impacted by these natural calamities. According to the Global Climate Risk Index 2021, Pakistan ranked 8th among the most affected nations from 2000 to 2019, highlighting the severity of the threat facing the country. The nation

grapples with extreme heatwaves, rapid glacier melting, erratic monsoon seasons, and recurring floods, which annually devastate farms, homes, and urban areas. (Dalal, 2025).

In recent years, Pakistan has experienced an increase in the frequency and intensity of climate-related disasters. The floods in 2010 inundated nearly 20% of the nation, impacting 20 million individuals and resulting in damages exceeding $10 billion. A subsequent calamity occurred in 2022 when extensive floods again affected over 33 million people. These disastrous events claimed the lives of more than 1,700 individuals, with damages estimated at $14.9 billion. Such occurrences highlight the growing human and financial toll of climate change. Additionally, climate change is inflicting harm on Pakistan through gradual and long-term effects. Increasing temperatures have led to perilous heatwaves, notably the one in 2015 that resulted in over 1,200 fatalities in Karachi, overwhelming local hospitals. Water shortages have also become a critical issue. Nearly 80% of the population experiences severe water shortages for at least a month annually. This jeopardizes agriculture, which employs approximately 38.5% of the nation's workforce. Additionally, water stress exacerbates food scarcity and nutritional issues. (Hussain et al., 2020).

Pakistan's climate change policy framework is crucial in directing the country's response to this existential issue considering these circumstances. This essay provides a thorough investigation of Pakistan's climate change policies with the goal of analyzing its essential elements, evaluating how they are implemented, and assessing how they affect different facets of the economy and society. Additionally, the paper examines the intricate institutional arrangements that support the implementation of these policies, closely examining the roles and duties of governmental entities, non-governmental organizations, and other stakeholders in advancing climate action. The consequences of climate change include rising sea levels, melting glaciers, droughts, heat waves, flooding, and altered precipitation patterns (United Nations, 2021). In Pakistan, where floods are destroying agricultural output, killing livestock, and destroying towns, these consequences have caused serious concerns. Since Pakistan has experienced its worst climate-related disasters during the last five years (2020–2025), including the historic super floods of 2022, record-breaking heatwaves, and ongoing water scarcity challenges, this study will specifically focus on that time frame. These recent events provide an urgent and relevant context for considering the implications of climate change for national security. (Aslam et al., 2020).

Literature review

Among the issues caused by climate change in Pakistan include floods, glacier retreat, rising sea levels, heat waves, temperature fluctuations, droughts, storms, and cyclones. The paper provides an overview of the factors driving climate variability and information on countries that make major contributions to greenhouse gas emissions. He notes that the United States and China are the two countries that release the most greenhouse gases into the atmosphere. Agrarian economies like Pakistan are particularly vulnerable to the negative effects of climate change because of their reliance on natural resources. According to the Intergovernmental Panel on Climate Change (IPCC), Pakistan is more susceptible to intense rainfall as temperatures rise. Pakistan's agriculture is seriously threatened by rising temperatures, waterlogging, deserts, floods, and glacier melting. Additionally, the industrial sector, which depends heavily on agriculture, is at considerable peril. Pakistan is experiencing social ramifications from climate change in addition to economic ones, including internal migration due to floods, water scarcity, and sea level rise, as well as health problems including cholera, dengue, malaria, and typhoid (Mustafa, 2011).

Pakistan's environment, economy, and society are seriously threatened by climate change. It makes development efforts more difficult and increases vulnerabilities. The literature on climate change offers insightful information about Pakistan's complex problems and policy solutions. The rising frequency of extreme weather events like heatwaves, droughts, and floods in Pakistan is a clear indication of the effects of climate change. Devastating floods in 2020 impacted about 20 million individuals and cost the economy $10 billion (Rehmat et al.,

2023). In addition, the 2015 heatwave that killed over 1200 people and overburdened medical facilities nationwide underscored the significance of tackling the health risk associated with climate change (Akhtar, 2016). Climate change poses a major threat to Pakistan's economy, society, and ecology. It increases vulnerabilities and complicates development efforts. The literature on climate change provides useful knowledge regarding Pakistan's intricate issues and potential solutions. An obvious sign of the effects of climate change is the increasing frequency of extreme weather events in Pakistan, such as heatwaves, droughts, and floods. About 20 million people were affected by devastating floods in 2020, which cost the economy $10 billion (Rehmat et al., 2023). Furthermore, the need of addressing the health risk linked with climate change was highlighted by the 2015 heatwave that killed over 1200 people and overloaded medical facilities across the country (Akhtar, 2016).

Pakistan has developed several climate change policies and strategies to address adaptation, mitigation, and resilience-building in response to these issues. A key component of Pakistan's climate change governance framework is the National Climate Change Policy (NCCP) of 2012, which outlines goals, priorities, and action plans for several sectors (Government of Pakistan, 2012). However, the successful implementation of these policies is hampered by issues with resource allocation, institutional coordination, and policy implementation. Furthermore, Pakistan's problems with climate change have been made worse by the urbanization phenomena. Vulnerability to climate-related risks such urban flooding, heat islands, and air pollution is increased by rapid urban growth, poor infrastructure, and uncontrolled development. To address these issues and advance sustainable urban development, studies by Hyder et al. (2024) and Iqbal & Ullah (2024) highlight the necessity of integrated urban planning and climate-resilient infrastructure. (Abdul & Yu, 2020).

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Pakistan is among the top ten countries in the world where climate change has a significant influence on people's lives. Climate change affects practically every South Asian nation, but Pakistan is particularly vulnerable, having detrimental effects on the wellbeing of its people. Contributing factors include the overall lack of awareness among the people regarding the detrimental impacts of climate change and the lack of modern strategies to counteract climate threats. Disasters like droughts, earthquakes, floods, storms, avalanches, and more often happen because the country's physical infrastructure is not equipped to deal with climate-related problems. Despite these challenges, Pakistan lacks a comprehensive and informed national strategy to address the climate-related issues that the World Bank and the UN have recognized (Islam et al., 2016).

National Security Policy of Pakistan (NSP 2022-2026)

One of the key characteristics of the NSP is its unambiguous recognition of climate change as a national security issue of utmost concern, with far-reaching consequences regarding the stability and development of Pakistan. The policy determines the environmental threats, which include floods, droughts, heatwaves, desertification, and glacial melting, as critical factors that may disrupt the economic activity, displacing populations, and increasing competition on resources. Climate variability is more likely to affect Pakistan because it is highly dependent on agriculture and has scarce water resources that can directly affect food security, employment and livelihoods in the rural areas. Disasters caused by climate, including massive floods, not only destroy infrastructure, but also lead to long-term humanitarian crises due to rising poverty, migration, and inequality. The NSP emphasizes the importance of the immediate need to implement climate adaptation measures, such as better water governance, investing in climate-resilient infrastructure, encouraging the use of renewable energy, and preserving natural ecosystems. It also

highlights the importance of disaster risk reduction by using early warning mechanisms, improved urban planning, and resilience programs. The policy has connected environmental issues to human security based on the argument that the accessibility of food, water, health, and housing is critical in ensuring national stability. (Rizwan, 2023).

Integration of Institutional Framework, Governance and Policy.

The effectiveness of the institutional and governance structures of Pakistan is a key determinant to the successful implementation of the NSP. The policy recommends that there should be better coordination between the federal and provincial governments and that a coordination should be established between the civilian and military institutions to have one voice in addressing security issues. It highlights the importance of evidence-based policymaking, making decisions that are based on data, and long-term strategic planning to tackle complex and interconnected threats. It is believed to be very important to strengthen institutions like disaster management bodies, environmental, and economic planning institutions to improve state capacity. The NSP also emphasizes the need to have transparency, accountability and good governance in developing trust of people as well as providing effective allocation of resources. Nevertheless, bureaucracy, instability of the political environment, financial constraints, and technical incompetence tend to impede the successful implementation of policies. The solution to these gaps is institutional reforms, capacity building and long-term political commitment to long-term national objectives.

The Goals of The National Climate Change Policy

The national climate change policy of Pakistan was developed in 2012 and put into effect in 2013. To find the policy's unaddressed measures, however, more research and analysis are required. The NCCP proposes 120 policy measures that cover a variety of topics and place a particular emphasis on the development sectors agriculture, transportation, human health, energy, forestry, and disaster preparedness for the analysis to be methodical and well-organized. It also emphasizes capacity training, institutional strengthening, and increasing awareness of technology transfer. In addition to all of this, NCCP works to promote regional and global climate cooperation in order to obtain a portion of climate funding and to fight for global change (Mumtaz, 2018).As a developing nation, Pakistan has developed a comprehensive climate change policy that highlights the NCCP's shortcomings, including the fact that "it is impossible to implement in its [the NCCP] present form as the NCCP has not actively incorporated key stakeholders." A few of the NCCP's weaknesses have also been found, highlighting the need for additional research—not to pinpoint its shortcomings, but to confirm the findings of the studies that have been conducted for the NCCP.

Assuring food, energy, and water security in the face of climate change problems is the fourth goal. Disaster management, including reducing risks resulting from the frequency and severity of extreme events, is the focus of the fifth policy aim. Addressing the enhancement of interministerial decision-making and climate change coordination mechanisms is the sixth goal. The necessity of funding for climate change is emphasized in the eighth policy aim. Creating incentives for public and business sector investment in adaption measures is the goal of the eight-policy objective. Improving the knowledge, expertise, and institutional capacity of pertinent stakeholders is the eighth policy goal. The last policy goal is to encourage long-term sustainability and the preservation of natural resources. That policy has over 120 outstanding recommendations. However, no activities have taken place. It would have been beneficial if it had been put into practice. (Rizwan, 2023).

Governance Structure for Implementing Climate Change Policies

The NCCP was followed by the Framework for the Implementation of the Climate Change Policy. This document's primary goal is to mainstream all climate change-related issues. The second goal is to include climate change considerations into provincial and federal decision-making. A supporting environment for an integrated and climate-compatible development process is created and required by this text. The framework states that certain sectors require adaptation and mitigation

measures due to their vulnerability to climate change. Policy measures pertaining to institutional development, capacity building, and raising awareness of climate change in pertinent sectors have been identified. Nevertheless, the framework has yet to be applied as a guiding document for climate change decision-making in more specialized industries. The flaw in those policy documents is the precise deadlines and goals they set. One of the Framework for Implementation 2013's priority goals, for instance, was to pursue massive forestation and reforestation programs to increase the nation's forest cover.

This goal might have included a description of what would happen after two years if the alleged "massive" forestation was not pursued. The policies must incorporate a review process for tracking advancement toward the stated objectives. Using the same example, clear goals are defined for each province to finish. The likelihood of successful implementation would rise with specific action plans and financial commitments. The 18th Amendment states that the environment is a provincial matter. Addressing the issue of climate change, which impacts everyone, requires coordination between federating units and the development of provincial environmental authorities' ability. Implementation Committee for the National Climate Change Policy The creation of the Environmental Protection Agency has led to a slight improvement in implementation. To gather the opinions of stakeholders and civil society, environmental impact assessments of projects are carried out, and public hearings are scheduled under them. There is a chance to increase renewable energy investment because Pakistan is currently generating 1000 MW of electricity from renewable sources. (Center for Research and Security Studies, 2024).

Ministry of Climate Change, Pakistan

Section 5(2) provides for the creation of the Pakistan Climate Change Authority. This authority's main goals are to carry out the duties and execute the powers granted under the Climate Change Act of 2017. It is possible to sue this authority. It can sign agreements, buy property, take out loans, and take over when necessary. Technocrats, professors, professionals, industrialists, and agriculturists make up this more corporate organization. The creation of such a corporate entity is encouraging for the nation's climate change policy. However, the foundation of such positive signals is rigorous merit-based appointments. All efforts to lessen the calamities brought on by climate change in the future may be halted by the political allocations and tradition of favoritism among professionals. Going forward, the authority's functions are explained in section 8. This authority also covers the technical aspects of the Paris Agreement accord. Since the members of the Pakistan Climate Change Council lack the power to verify the council's conclusions, this opens the door for a lack of accountability. This authority's responsibilities include climate change research and development as well as education and awareness efforts. The fight against climate change will go all the way to the bottom if these 40 tasks are performed flawlessly (Sarim, 2018).

Section 10 empowers the authority to carry out the duties outlined in this act. Forming alliances with both public and private development organizations is one of the authority's major powers. Executive approval is necessary, though, to form alliances with organizations in other areas. This can harm the authority's overall operations and impede the organizational flow of procedures. Furthermore, compared to several, specialized bodies dispersed around the nation, the centralized authority centered in Islamabad is less effective at entering into agreements with other development organizations.

Climate Change Act 2017

Pakistan joined the select few nations with climate change laws in 2017 after passing the Climate Change Act, which expanded on the 2015 Paris Agreement. Three entities were proposed under the Act: the full-fledged Pakistan Climate Change Authority, the Pakistan Climate Change Fund, and the high-level Pakistan Climate Change Council. Building resilience to climate change, fulfilling the nation's international climate change (mitigation) commitments, and implementing the Climate Change Policy all depend on the construction of these institutions. To fulfill Pakistan's responsibilities under international climate change conventions and combat the

consequences of climate change, the Pakistan Climate Change Act 2017 was passed. The Pakistan Climate Change Authority (Authority) and the Pakistan Climate Change Council (Council) are established. In essence, the Council has the authority to oversee and coordinate the application of the Act's provisions. On the other hand, the Authority's main duty is to create adaptation that the Federal Government may occasionally approve. To help the Authority carry out its duties, the Minister-in-Charge may also form Advisory Committees. Additionally, the Climate Change Fund was created to cover costs incurred by the Authority while performing its duties. (Rahman, et al., 2018)

Legislation and Policy Responses to Address Climate Change: Global and National Perspective

Because it affects every aspect of human life, climate change is regarded as a contemporary environmental and developmental concern, to mainstream climate change adaptation and mitigation into all development policies, programs, and activities to achieve sustainable development. Understanding the connection between the sector's climate change and development concerns is the first step in mainstreaming climate change. Human-caused climate change has posed a severe danger to efforts to achieve the Millennium Development Goals, including sustainable development and poverty reduction (World Resources Report, 2011). The primary cause of climate change is man-made greenhouse gases, which are produced by business operations. Through innovation, special skills, and capacity building, businesses can handle climate change. The institutional frameworks in which businesses function determine how they respond to climate change. Institutional theory states that the International Standard Organization (ISO) certification to manage HGH contaminants is an informal and formal extra organizational mechanism that sets expected behavior requirements that will influence enterprises' responses. The Pakistan National Conservation Strategy (NCS) was created in 1992 to address the nation's environmental protection and pollution management issues, and the Pakistan Environment Protection Act (PEPA) was drafted in 1997. Adaptation and mitigation are the responses to climate change. By building infrastructure that can endure harsh conditions and handle disasters, adaptation means changing the variables to reduce vulnerability. (Mallick & Masood, 2011)

The improvement of the current situation is referred to as mitigation. Carbon sinks effectively reduce the number of gasses that are trapped in the atmosphere. Carbon is sucked up by forests and soils. Carbon is absorbed by the trousers for photosynthesis. Climate change appears to be the nation's unavoidable destiny. The effects can be seen in the rise of disasters and their control over the nation. These little but growing elements are having an impact on the county's natural ecosystem. However, in response to the current situation, awareness programs have started to inform the public about the negative aspects of the nation. To protect Pakistan from the damaging effects of climate change, the government stepped up efforts to build a suitable policy response after realizing the wide range of climate change consequences across numerous socioeconomic development domains. The government's sincerity is demonstrated by the establishment of the PMCCC Prime Ministers Committee on Climate Change in 2005. Since 2005, climate change or control committees have been established in all government standing committees to guarantee the performance of all accountable authorities. An intelligent decision was made in 2008 by Pakistan's Planning Commission, which created the Task Force on Climate Change (TFCC). To assist Pakistan's government in achieving sustainable economic growth, the TFCC was tasked with "producing information concerning the threat and problems of climate change, contributing to the formulation of NCCP." However, in 2012, Pakistan unveiled the National Policy for Climate Change (NPPC), its first climate change policy. In 2013, it was formally announced by the Ministry of Climate Change. Adaptation to the climate is its central focus. The policy focuses on the various climate change variables. Various industries have been identified as being particularly susceptible to climate change, and workable adaption strategies have been suggested (Khan, Ali, & Ahmad, 2016).

Policies and Regulations Addressing Climate Change

Fortunately, or sadly 2019–2020 will be a transformative year for global environmental health because of the COVID-19 pandemic. As of this writing, the number of corona virus cases worldwide has surpassed the number of individuals killed by the virus. Environmentalists around the world, including the UN Environment Director, are expressing alarm about the epidemic and believe that the only two benefits of the worldwide pandemic are the environment and climate change. Although the pandemic has claimed a great number of deaths, a reduction in human activity and the ensuing lockdown have decreased greenhouse gas emissions and carbon emissions, which thickened the ozone layer because unrestrained human activity is the primary cause of ozone layer depletion.

Undoubtedly, a lot of agreements and conventions are made with the intention of resolving the problem of weather variations. If the US had adopted the Kyoto Protocol (1997), it would have been extremely effective because it set a limited number of emission objectives. The Least Developed Countries Fund and the Special Climate Change Fund (SCCF) were created during the Conference of Parties 7 (COP) in 2001. Negotiations on several forums have never been stopped by the UN. After being ratified by 55 countries, the Paris Accord went into effect in 2016.However, it is clear from the environment that human existence has suffered greatly because of climate change. Nevertheless, several nations do not recognize the seriousness of this problem (Hermwille, Obergassel, Ott, & Beuermann, 2015).

Parliamentary Discussion on the Management of Climate Change

The Pakistani Parliament has shown a great deal of interest in this issue because it recognizes the impact that climate change has on the lives and livelihoods of the populace. National assembly recently passed the Pakistan Climate Change Bill 2016, which is a significant step in the effort to protect the populace from the threat of a rapidly changing climate. According to the bill, the Climate Change Council will serve as the director of the newly established Climate Change Authority. Ensuring a suitable framework for adaptation to lessen the effects of climate change is the primary duty of this council. It will offer a framework for mitigating and adjusting to the changes brought about by climate change on various economic sectors. Additionally, in terms of supervision, lawmakers hold the executive branch responsible for a wide range of climate change-related matters. The Federal Ministry of Climate Change is supervised by Standing Committees in both chambers of Parliament. Additionally, lawmakers frequently use oversight measures like question hours to draw attention to climate change. (Zeeshan and Khan, 2019)

Recent Developments in Climate Change Policy

Pakistan has ratified the Paris ACCORD. It demonstrates Pakistan's strong commitment to environmental improvement. Inspired by Pakistan's vision 2025, its Nationally Determined Contribution (NDC) report projected that emissions has increased. To address energy shortages, the Vision 2025 strategy paper calls for adding 25,000 MW to the national system by 2025. Accordingly, over $40 billion is needed for this project to reduce emissions by 20% by 2030. An investment of over US$ 40 billion would be needed to reduce emissions by up to 20 percent by 2030, and Pakistan will require 7–14 billion USD annually in international funding to achieve its adaptation needs. Since improving irrigation and water management has a significant potential to reduce emissions, it is Pakistan's top priority for mitigation efforts. Energy accounts for 46% of Pakistan's total emissions, followed by agriculture (43%), and the industrial sector (5%). As the development program is carried out and the CPEC projects are finished, emissions from the energy and industrial sectors are predicted to rise rapidly. Pakistan must increase its efforts to find a solution to this problem. (Chandio et al., 2020).

Pakistan will receive aggressive assistance from the international community once their achievements are recognized. To improve the nation, the country should accelerate its mitigation efforts. The climate change bill, which calls for the creation of a Pakistan Climate Change Council, has been approved by the country's cabinet. Projects created under the

authority will be carried out by the provinces. These encouraging events highlight Pakistan's readiness and determination to successfully handle climate-related challenges. Due to Pakistan's involvement in COP22, the nation was able to discuss its financial requirements, vulnerabilities, and accomplishments in relation to climate change. Among other accomplishments, Pakistan produced a National Sustainable Development Strategy on February 19, 2016.The National Energy Efficiency and Conservation Act of 2016 was also passed by Pakistan. Furthermore, burning plastics and using non-biodegradable plastics are major problems in Pakistan that seriously pollute the environment. The policy that prohibits the use of non-biodegradable plastics and imposes a reward/penalty mechanism for it by prohibiting the use of plastic bags. With effect from August 14, 2019, polythene bags are prohibited in Islamabad under these regulations. Statutory Regulatory Orders, or SROs. on July 22, 1999, in accordance with the Pakistan Environmental Protection Act 1997.However, due to a lack of alternatives, this was unable to be implemented for a long time. While some respectable firms utilize polythene bags for sales and purchases, small businesses cannot afford to employ these alternatives (Gazette of Pakistan, 2019).

Climate Change Act 2017

Pakistan's first climate change law, the Climate Change Act 2017, was introduced in accordance with the Paris Agreement. As a result of this act, three institutions were established.

The Climate Change Council of Pakistan

Section 3 of the Climate Change Act of 2017 authorizes the creation of the Pakistan Climate Change Council. The prime minister is responsible for establishing the council and appointing its members, including the prime minister himself. The leaders of all relevant regions of the nation will be represented on the council. The chief ministers of each province and the heads of disputed territories will be among the council's members. It is commendable that all interested parties will have the opportunity to talk about the policies, which are applicable across the nation. Additionally, he arranges for civil society members to be added to the council. This suggests that more extensive policies will be implemented in the future. There is a cap on the number of council meetings, though, and the council must convene at least twice a year. There is serious fear that this council would become a dead letter due to its two annual meetings and sporadic policymaking patterns (Sarim, 2018).

The council's duties and authority are outlined in Section 4. The council's main responsibilities include overseeing the implementation of the Climate Change Act of 2017, offering strategic direction for the Sustainable Development Goals (SDGs) of the UN, approving, monitoring, and carrying out Pakistan's climate change-related commitments in the framework of climate change legislation, there are not many disciplinary actions. This council's goal is to provide a strategic dimension to the climate change decision-making process, with less emphasis on executive functions. Additionally, it is unclear how the council intends to hold people accountable for disregarding the climate change guidelines. A lack of policies in the areas of self-accountability is another issue. These constituents will be held accountable if the council members are found to have violated the act's requirements for actions (Pakistan Climate Change Act, 2017). Additionally, young people are underrepresented on this council. Pakistan's young make up most of the the country's population. Since the public will ultimately be impacted by the policies, it is also in keeping with the Sustainable Development Goals of the UN to directly involve youngsters in the policymaking process. (Pakistan Climate Change Act, 2017).

Implementation of National Policies

Addressing climate change issues can be greatly aided by the integration of climate change policy with other national policies. By combining development, adaptation, and mitigation measures, such national policy integration enables developing nations to attain sustainable development (Pilato, Sallu, & Gaworek-Michalczenia, 2018). National policies should appropriately meet the development, adaptation, and mitigation goals to achieve climate-compatible development. In this sense, integrating NCCP with other interconnected national policies is one of its goals. For example, The National Disaster Management Policy, the

National Water Policy, the National Power Policy, the National Agriculture Policy, and the National Industrial Policy are just a few of the interrelated national policies that must be linked with NCCP. Many variables make it difficult to integrate climate change with other related programs. The two most often cited challenges in this setting are limited resources and insufficient knowledge. (Waqas, Tan, Muhammad, & Ham, 2020).

The committee discussed the recent collaboration between the Global Change Impact Study Center and Provincial Agriculture Research to enhance and strengthen farming sector resilience under Agenda No. 11. Research on issues in the farming sector has been presented by a variety of Provincial Agriculture Institutes. The committee discussed recent collaboration between the Ministry of Climate Change and the Ministry of Information in Agenda No. 12, wherein a consensus was reached to raise awareness about the need to reduce the usage of plastic bags using various social media video messages. Regarding this, the Committee stressed the importance of spreading literature and video messages on social media about cutting back on plastic bag usage to raise awareness of climate change in Islamabad. (Corwin, 2021).

In a similar vein, the committee requested in Agenda No. 13 that the secretaries of the forest departments in each Provincial Government receive a briefing on the topic of planting trees alongside roadways. The committee receives a thorough briefing on Pakistan's government policy regarding electric vehicles in Agenda No. 36. The committee suggested permanently waiving the tax charge associated with switching from fuel engines to electric engines. Like this, the committee has addressed complaints against OGRA in Agenda No. 37 regarding the 16% additional fees that gas pumps on motorways and at motorway interchanges charge, particularly when paid with a credit or debit card. The following are some recommendations that the committee has made in this regard. The committee ordered gas stations to raise their standards and stop charging excessive amounts, instructed OGRA to address member concerns about subpar fuel and excessive fees and recommended that OGRA start a campaign to raise awareness about the importance of wearing gloves and a facemask during COVID-19.

Natural Disaster Management Authority (NDMA)

Climate change policies should be used in conjunction with disaster risk management because natural-climatic disasters are becoming more common because of changing climatic circumstances (Zubair, 2013). Extreme weather events, floods, droughts, and heavy rains are examples of natural-climatic disasters that are becoming more common and intense because of climate change. Only prompt adaptation actions can lessen their occurrence Pakistan is already experiencing the effects of climate change, including floods, droughts, excessive rains, and other natural hazards, the entire financial losses from natural-climatic disasters, such as floods, between 2010 and 2014 came to over US$18 billion. Using preparedness and adaptation strategies to reduce natural climate disasters is one of NCCP's primary goals. In the NCCP document, a total of twenty-two policy actions has been proposed to decrease natural-climatic disasters by acknowledging that immediate prevention of destruction due to natural hazards is not possible. Creating a suitable monitoring system for the growth of glacial lakes in the nation's more susceptible regions is another policy strategy. Additional policy initiatives focus on enhancing early warning systems. The third item on the agenda was the same one that had been covered in the meeting's capacity-building section. The committee had reached an agreement to outlaw plastic and ox degradable bags and had alerted members to the fact that glaciers were melting. (Hussain, 2020).

In a similar vein, the committee addressed new agricultural concepts and issues pertaining to the farming industry in the 7th Agenda to raise awareness among local farmers. The committee has suggested a campaign to raise awareness among farmers and agriculturists in this regard, as well as the prompt distribution of reliable information to farmers, including the introduction of a specialized application. The members also proposed asking farmers and the organizations that represent them for their opinions on this issue. The members also emphasized the importance of educating farmers about the quick changes in climate through

media and apps. The committee promised to raise public knowledge of flood and disaster management during Agenda No. 14. To raise public awareness, the committee recommended that the information system between local lawmakers and district administration be strengthened. The committee instructed the DCO to work with local lawmakers to manage disasters and floods. In a similar vein, the committee welcomed GCISC representatives to receive a briefing on the ongoing climate change projects in Agenda No. 17. The Committee suggested that Pakistani agriculture universities post their findings on the website of the ministry of Climate Change. (Shabbir et al., 2020).

Sustainable Development of Pakistan's National Resources

It is crucial and more difficult to manage natural resources, including forests, water, and land quality, sustainably, especially considering the changing climate. Climate change is threatening the sustainability and viability of natural resources. Infrastructure growth, technological advancements in extraction, and product-market expansion have all contributed to the destabilization of Pakistan's natural resource base (Waqas, Tan, Muhammad, & Ham, 2020). The country has seen widespread deforestation because of poverty, population growth, and government indifference to forest protection, and the forestry sector has become more vulnerable in the last 20 years to changing climate conditions. Both adaptation and mitigation activities are essential to prevent deforestation, and Pakistan's forestry industry is now insufficient to manage potential future climate challenges (Pakistan's Intended Nationally Determined Contribution, 2016-2017). In terms of the energy sector, energy production strategies are not sustainable in the nation and call for mitigation measures to handle issues associated with climate change. (Solangi, Tan, Mirjat, & Ali, 2019).

Since the transportation industry is Pakistan's largest consumer of nonrenewable energy sources, the widespread use of nonrenewable energy strategies is making climate change-related issues in this sector worse. Two-thirds of the nation's energy production comes from non-renewable sources, and the transportation sector makes climate change-related issues worse. In this sense, encouraging the conservation of natural resources is one of NCCP's primary goals. A variety of legislative initiatives have been put forth to curb deforestation in Pakistan. For example, increasing scientific research to better understand how Pakistan's forest sector and climate change are related, minimizing damage and enhancing the resilience of the forest ecosystem, improving forest governance and management, raising public awareness, and strengthening institutional and professional capacities to adapt to climate change. The committee expanded its purview to include billion-tree projects and launched the Green Pakistan Program in Agenda No. 6. The committee has made sure that the right documentation is kept on the tree planting and has requested that the secretary specify the locations, quantity, and kind of trees that will be planted. The committee requested that the province government's forest secretaries attend Agenda No. 23 to get a briefing on the topic of planting trees alongside roadways. (Shirwani, Gulzar, Asim, & Umair, 2020).

The committee informed the members in Agenda No. 18 that the government had granted Rs. [illegible] billion for the planting of 3.29 billion trees over four years. The committee has noted in Agenda No. 20 that restaurants are being built on the grounds of Margalla Hills National Park, endangering biodiversity. To stop restaurants from being built on the grounds of Margalla Hills National Park, the Committee instructed that CDA be called at the following meeting. The Committee has also recommended that climate change be given control of zoos and national parks rather than CDA. In a similar vein, the committee has notified the members in Agenda NO. 26 that the capital city's zoo has been approved. The secretary of climate change ensured that within three months, the Islamabad Wildlife Management Board will be established and operational. The committee has addressed the Billion Tree Program in KPK, the use of two-stroke engines, and the absence of safety features in locally produced automobiles in Agenda No. 39. The Climate Change Ministry was instructed by the committee to submit a report on the Billion Tree Program. The committee also suggested that the ministry of climate change send a letter to every province urging them to increase the token tax on stroke

engines and to establish a suitable system for evaluating emissions testing of every vehicle prior to collecting the token tax each year. The Ministry of Industries and Production has pledged to requiring local automakers to incorporate safety features at no extra cost. (Khan et al., 2021).

Financial Assistance and Investment in Climate Change Programs

An effective climate governance framework is necessary to coordinate development expenditures with climate change policies and control extreme weather situations (Rehman, Ma, Ahmad, & Irfan, 2021). Integration of climate change policies with other national policies has been encouraged by the recent expansion of the global financial environment. Climate financing has become a unique motivator for developing nations to incorporate climate change-related policies into other national policies for a variety of reasons. According to Chaudhry (2017), affluent nations sent about $34 billion in climate finance flows to developing nations in 2013. Through the implementation of several policy initiatives and the signature of various international climate-related conventions, Pakistan has enhanced its climate governance framework throughout time. Pakistan can receive financial and technical help because it is a signatory to the UNFCCC. For example, the Asian Development Bank gave Pakistan $398.8 million in climate finance between 2011 and 2015. Pakistan's government has started several initiatives to support climate-related development by including climate budgeting into planning and policy. Consequently, climate change is becoming increasingly recognized in Pakistan's annual economic surveys, long-term national plans, and public sector development initiatives. Climate-related costs accounted for 7.6% of all government spending in 2015 (Pakistan Climate Public Expenditure and Institutional Review, 2015).

In a similar vein, the federal government reexamined its funding allocation for climate-related expenses in 2016. The Framework for Implementation of Climate Change Policy documents have suggested many policy approaches to ensure sustainable climate financing in the nation. Adequate efforts must be made by putting the adaptation plans outlined in the NCCP into action to obtain adaptation funds from foreign donors. Other policy initiatives support the creation of a Pakistan Climate Change Fund to pay for climate-related expenses. The committee reviewed the ministry's financial recommendations for the Public-Sector Development Program (PSDP) for 2019–20 in Agenda No. 1. The ministry of finance is tasked with allocating the necessary funds for all the year's projects. The committee gave the directive that all projects be finished on schedule and in compliance with the established guidelines. The committee reported in Agenda No. 18 that the government has approved 125 billion rupees to plant 3.29 billion trees over four years. The committee has recommended that it be given access to the plantation's district and provincial records. The committee has also reported in Agenda No. 26 that the PM has authorized the funding for the capital city's zoo. Regarding this, the climate change secretary ensured that the Islamabad Wildlife Management Board will be established and operational within three months. (Fahad & Wang, 2020)

Summary

Climate change in Pakistan is multidimensional since it has consequences on human security, economic stability, and social cohesion. Water scarcity, soil degradation, and unpredictable weather conditions cause the agricultural sector, which sustains a high percentage of the population, to suffer great losses. Likewise, water resources are being pressured by the fluctuation of river flows and reduced availability, raising concerns about water security. Damage of infrastructure due to flood and other catastrophes disturbs transportation, communication and other basic services and comes at a high economic cost.

These issues are associated with food insecurity, increased poverty and unequal resource distribution, especially to the vulnerable communities in the rural and underdeveloped areas. Social and demographic pressures are also aggravated by climate change, especially by climate-driven migration. Floods, droughts, and environmental degradation lead to isplacement of people, which results in migration of people to urban areas, putting pressure on the urban

areas and creating a competition among people regarding the available scarce resources like housing, employment, and basic amenities. In other instances, cross-border migration can also be possible complicating regional relations. Such population flows may help provoke social tensions and bring out preexisting inequalities particularly where governance mechanisms are feeble and incapable of effectively responding to increasing demands. In sum, climate change is a threat multiplier in Pakistan, which influences existing economic, social and environmental vulnerabilities. Its effects do not just affect the environment but also the stability of nations through impacts on livelihoods, scarring of resources and straining state institutions. The increasing occurrence of climate-related disasters proves the necessity to discuss the issues as they can interfere with the long-term development and precondition the instability in case, they are not addressed successfully.

Findings

Rising Climate-Induced Disasters

Pakistan has experienced an increased frequency and intensity of climate-related disasters over the past five years, including floods, droughts, heatwaves, and cyclones. Major floods in 2022 and 2023 caused extensive damage to infrastructure, disrupted supply chains, and displaced millions of people. These events not only strained government resources but also created vulnerabilities that can be exploited in contexts of social unrest, highlighting a direct link between environmental change and internal security challenges.

Governance and Institutional Challenges

The analysis reveals gaps in institutional preparedness and policy responses to climate-induced threats. Inadequate disaster management, insufficient support for farmers, and delayed relief measures have undermined public trust in government institutions. This governance gap amplifies the security implications of climate change, as populations affected by environmental shocks are more likely to experience economic hardship, social instability, and dissatisfaction with state authorities.

Energy Security Risks

Pakistan's energy infrastructure is closely linked to climate-sensitive sectors, including hydroelectric power and thermal generation dependent on water availability. Climate variability and extreme weather events have disrupted energy supply, leading to intermittent power shortages. These disruptions affect industrial productivity, public services, and national resilience, representing a strategic challenge for national security planning. Overall, the analysis indicates that climate change is not merely an environmental concern but a multi-dimensional national security threat for national security of Pakistan. Its impacts are evident in decreased agricultural productivity, water scarcity, increased internal displacement, socio-economic vulnerability, and strain on governance structures. The cumulative effects of these stressors threaten both societal stability and strategic security, highlighting the urgent need for comprehensive adaptation and mitigation strategies.

Conclusion

Pakistan is facing several issues because of climate change, including threats to its national security. There are currently 200 million people living in Pakistan, but that number is expected to rise quickly, potentially reaching 400 million or more by 2050. It can be extremely challenging for a nation with limited financial means and environmental vulnerability to deal with such a severe population crisis. Climate change can upend Pakistan's political system and destabilize the nation. Food insecurity, energy shortages, and water scarcity all contribute to anarchy. Considering these factors as well as the dangers of terrorism, extremism, and radicalization, Pakistan demands that corrective action against climate change and global warming be planned and put into action right away. Pakistan is attempting to join the group of nations that have identified themselves as major actors in the fight to reduce carbon emissions by implementing a climate change policy that makes the issue a priority agenda.

The most devastating flood in Pakistan's history recently damaged both persons and property. In Pakistan, floods frequently occur, resulting in land erosion, the devastation of thousands of acres of crops, and the deaths of both people and

livestock. Pakistan is at risk from heavy rains during the monsoon season. In Pakistan, heatwaves are now frequent occurrences that claim numerous lives. Coastal towns like Karachi and human settlements close to the coast are also in danger due to sea level rise. The world has been impacted by the phenomena of climate change, which has had multiple effects on state security. Pakistan is not an exception. Despite its small contribution to carbon dioxide emissions, it suffers from the adverse consequences of climate change on a worldwide scale. Although the government has released its climate change policy, the matter is far from over. Since everyone is concerned about national security, all institutions from the military to business and social sector organizations must express this worry and work to align. The issue can be effectively resolved by putting the policy into practice, creating think tanks to conduct research on climate change, and identifying strategies to stop this threat. The actions discussed in the preceding paragraphs are merely things to consider in this situation. Professionals can, of course, present more practical solutions when they get together.

Recommendation

- The Ministry of National Food Security and Research ought to develop resilience tools for crop irrigation and upgrade its climate smart agriculture solutions.
- Sindh created its own water strategy in 2023, but the state needs to establish the challenging links between its growing metropolitan areas to more efficiently manage water resources in a setting of competing and disjointed municipal and land-use authorities.
- The National Disaster Management Authority (NDMA) should create a thorough Disaster Risk Management (DRM) Framework that incorporates preventive, preparedness, response, and recovery activities.
- For DRM implementation to be successful, the institutional capacity and coordination between pertinent government agencies, civil society groups, and the commercial sector should be improved.
- To improve readiness and reaction capabilities, investments in warning systems, technology, and infrastructure should be promoted.
- To strengthen local communities, community-based disaster risk reduction programs ought to be supported.
- Pakistan needs regional and international cooperation to address climate change, which is a transboundary issue, to acquire best practices and obtain resources for disaster risk management.
- Given that climate change is a major danger multiplier, an integrated national security plan that takes it into account is required. To guarantee that national security policy is implemented effectively, the plan should provide specific actions for every climate-related risk. A framework for climate diplomacy should be created to interact with both domestic and foreign players. Best practices for promoting global climate action should be incorporated into this framework

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