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Evaluating Pakistan's Climate Change Strategies: Challenges and Shortcomings

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ABSTRACT

Climate change is a reality, and it is destructive to Pakistan and the entire world. Climate change is a real threat to all facets of sustainable development. It impacts all sectors, including agricultural and food, water and energy, forests and their living beings, the coastal and marine systems, and increase in frequency coupled with severity of climate calamities such as floods and droughts. Thus, Pakistan has experienced this problem regularly and, in order to solve this, the National Climate Change Policy was created in 2012 and enacted in 2013. But it does encourage more analysis and assessments to identify any missed or unimplemented policy measures, to examine more rigorously the adopted policy measures, and to ensure their proper application. This article examines the impact of the present and future climate change in Pakistan, and presents a critical overview of the challenges and obstacles to the implementation of climate change policies in this country. This article focuses on the policy implementation barriers that result in poor adaptation and enhanced risk of exposure to extreme vulnerabilities, based on experiences in Pakistan. The study also highlights the nature of this problem and recommends a closer examination of the prerequisites of engagement in climate decision-making for better understanding and implementation of adaptation practices in de-centralized governance.

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INTRODUCTION

Climate change is a reality. Any changes in weather and other living conditions that are permanent are referred to as 'climate change' and unfortunately the human race has been accused of being responsible for this state of affairs by the Intergovernmental Panel on Climate Change's fifth assessment report. There are some signs which suggest that the planet is undergoing climate shift. Some of them include; changing sea levels, changing glaciers, changing magnitude and frequency of precipitation and snowfall, and reduction in sea ice (Weitzman, 2009; Singh and Singh, 2012). The complexities of climate change remain a major challenge to the globe according to Leiserowitz (2005). For the preservation and the sake of generations to come the global society cannot overemphasize the need to fight climate change.

From future climate change point of view, man-made as well as natural systems are vulnerable (Walker et al., 2015). It is not a secret that climate change progresses throughout this century will remain a threat even if it has been observed that the international community has achieved some success in reducing greenhouse gas emissions (Wilson 2006; Mumtaz, 2018). National climate change policies are primarily responding to the impacts resulting from climate change. Each nation designs its measures and actions regarding CDM, lack of greenhouse gases emissions, adaptation to the climate change outcomes, and sustainable development preparedness

Emerging nations being more prone, many nations are evidently so due to climate change. South Asia is suffering adverse impacts from climate change. This area is most prone to Natural disasters globally (Kelkar and Bhadwal, 2007; Sivakumar and Stefanski, 2011). Climate extremes affect South Asia every year: global warming and climatic change, revealed through increase in sea level, melting glaciers, reduced annual mean precipitation, reduced annual mean rainfall, change in precipitation, etc., are threatening the living of the poor people in these areas (Morton, 2007; Sterrett, 2011). Pakistan is more sensitive to the impacts of climate change in Asia and is ranked among ten most threatened countries (Wassmann et al., 2009; Khan and Samiullah, 2015). There is absolute evidence of climate change happening in the world and its impacts are being experienced in Pakistan also and being part of this climate change vulnerable region of south Asia Pakistan is seriously affected by the effects of climate change (Malik et al., 2012).

From previous sections, it can be seen that like any part of the world, Pakistan has acted upon climate change through various essays, action plans and climate policies. In year 2012, Pakistan initiated its first ever climate change policy. Benin was on the right course in tackling climate change by passing the National Climate Change

Policy (NCCP). The policy also outlines the more than 120 policy plans in many areas. It is a multi-segment policy that offers alleviation and adaptation measures for the concrete measure. Promotive sectors such as facial, forestry, energy, health, transportation, agriculture and disaster subsist to a lap more weight in the policy. Also, increasing wakefulness, distributing technologies, other important structural and procedural policies are also pointed out by the NCCP (Yusuf, 2017).

The policies are needful for reducing threats to agricultural productivity, guaranteeing availability of healthy foods, and flexibility of the societies that can face food vulnerability due to unfavorable climate terrible conditions. The aforementioned laws are also essential for protection ecology, biodiversity, ecology and environment general health as all of them are correlated with food security. First, not only this but identification of barriers and weakness also give great insight about the factor that restricts the implementation of policies. Due to lack of failings in hindrance identification the overall advancement is repercussions, finally leading to organizational, political and socioeconomic concerns (Ahmad et al., 2023).

Meanwhile, knowledge of these issues is crucial and gives essential data about what has to be developed and discussed to secure successful policy implementation. Furthermore, the assessment of Pakistan's climate change policy allow for the provision of policy permits to share best practices among the countries and learn from one another. From one country, efforts can be made to learn from corresponding endeavors which have targeted outcomes in another country, and therefore lay down well-organized strategies that Pakistani stakeholders and policymakers may wish to refer to in shaping the nation's environment. Last but not the least, Pakistan's Climate Change Policy helps in a more accurate assessment of what kind of resources to allocate and what goals to set.

An analysis of Pakistan's climate change plan also contributes to global efforts to combat climate change and build a more sustainable future. Since the effects of climate change will be seen in the social, economic, and environmental facets of sustainable development.

IMPACT OF CLIMATE CHANGE ON PAKISTAN'S ECONOMY

Most of Pakistan's economy is based on agriculture hence making Pakistan's agriculture extremely vulnerable to these swift changes in the global environment. Pakistan is most affected to different level of temperature change and variation of precipitation, which affects negatively the water supply, the forests and the agriculture of the country and Pakistan rely for the majority of their needs and necessities. These drastic changes in growth periods, species distribution, water demands, pestilence, disease, thermal, and moisture stress levels are specifically expected to fundamentally affect the bio physical link of fisheries, livestock, crops, and forest with the rapid temperature increase predicted. Information regarding the effects of climate change on the agriculture industry and natural resource endowment would however be varied because of the different agro-ecological regions. Rapid temperature increases in the arid western mountain region may accelerate deglaciation, which would have a significant impact on water resources that are vital to agriculture and electricity generation. The ecological deterioration in these western hilly regions is ongoing due to many natural and human activities that are posing a serious threat to them at the time (Ullah, 2017).

Basically, the functioning of the Agricultural sector Id required for a nation to address the question of food safety and quality of life and drive for rapid economic development. Research has shown that many emerging economies derive a good percentage of their Gross Domestic Product GDP from agriculture. Economic development is therefore inevitable if there is no enhancement of the agricultural productivity. Being the largest natural capital in Pakistan, crop land supports the largest employing sector in the country; agriculture with 21 per cent contribution to the GDP. Also, today the agricultural productivity in the country focuses 45% of the workforce; export earnings 18%. It has become important to investigate how the country's primary crop is an influence of environmental change since the agricultural sector is highly relevant to the country's economy and the disruptive impacts of rainfall and temperature are threatening it (Siddiqui et al., 2012).

Also, the industrial sector of Pakistan mainly relies on the growth in agriculture which in turn exerts direct pressure on this sector besides having negative impacts on the Pakistan economy similarly stated by Shahid and Adnan (2021). To some extent, yes climate change will affect the production in the food and energy sector of sustainable food and energy. This is a great threat to food production and the outcome product on energy and food security and thus has a direct bearing on the quality of the end product. Subsequently due to these rather harsh fluctuations in the environment, natural food and energy sources are constantly being depleted because of natural calamities. Unfortunately, floods have occurred in Pakistan and resulted in fairly severe losses of money in the agricultural and infrastructure industries over the years. Five previous floods since 2010 have caused cumulative economic losses of over $ 25 billion; infrastructure, health, irrigation, agricultural and education sectors were the first to be affected. In fact the 2010 floods for instance brought about damages worth close to US$9.6 billion. Cotton is a basic necessity in the country and most of the business in Pakistan is related to it, but it has been in a very bad state during all of these years of this catastrophe. Other developments which are associated with security concerns include; urbanization,

population, and serious environmental issues. The United Nations has already estimated that it will be 8.1 billion people in 2025 – compared to today's 7.2 billion. Pakistan is also experiencing the same large scale population growth and due to the corresponding unfavorable climate this is taking its toll on the economy of the country.

In addition, it is disturbing that constant heat wave regime and the enhancement of temperatures influence food production and energy sustainability in a most devastating manner. This results because warm weather often triggers higher usage rates that exceed generation capacity to produce electricity cheaply. Therefore we can conclude that the climate change is associated with socioeconomic state in different countries and to have sustainable economic development on the national and regional levels, it is high time to introduce effective long-term policies (Zahra et al., 2016).

The present scenario in Pakistan has reaffirmed that Pakistani nation is extremely exposed to the Climate Change bearings." Most importantly, Pakistan is lobbying to underscore in such expression 'particularly vulnerable developing countries' in UN accords that are to be inked in future (Khan, 2010). The amounts of the adverse economic impact of climate change will be comprehensive and cut across several areas including; Agriculture and cattle, forestry and fish etc., industries including transport with relevance to water, food and energy.

Due to the widely felt impacts of climate change on a host of economic activities, national planners and policy-makers are easily able to look at these impacts in their US dollar value so as to be able to obtain an estimate of the total costs of these negative impacts on the economy of their country. The other main facet of concern is estimating the costs in that the nation will face in order to pay for measures—an adaptation— to minimize risks on key economic sectors such as food, energy, and water. On the same note, the fact that Pakistan is willing to reduce greenhouse emissions as a responsible member of the global community gives rise to still another economic concern; the fact that the majority of the efforts to mitigate climate change impacts are also relatively costly Cheema et al., (2006). The issues mentioned above are essential and very important while developing the nation's development plans, particularly bearing in mind that there are severe resource constraints.

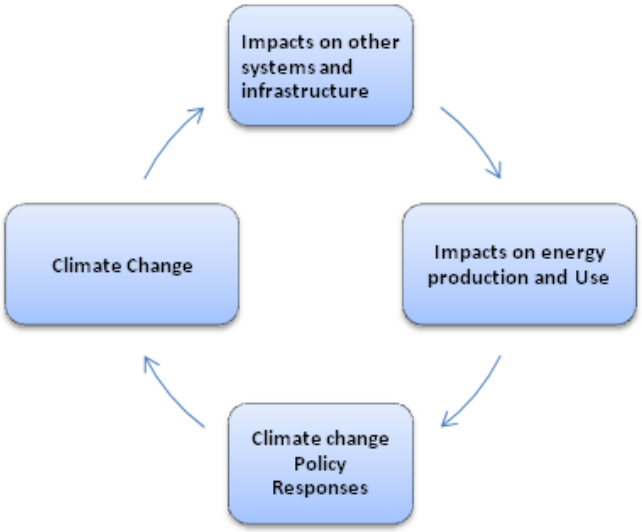

Figure 1: Climate change impacts on economy

Water Security

As things stand, there is an actual shortage of freshwater in Pakistan current. People needed to increase the water availability per capita from 5,600 cubic meters in 1951 to 1,200 cubic meters in 2003 and it is now below 1000 cubic meter water scarcity line Planning, 2007). Pakistan is already listed the seventh among the 165 countries in the Maplecroft index of water security risk that put Pakistan in the list of extremely high risk countries (Maplecroft, 2010). Water comes from two main sources in the nation: rainfall and thaw from ice fields. Monsoon and westerly winds together provide about half of fifty million acre-feet, or sixty billion cubic meters of rainfall. Another 141 MAF, or 174 BCM, originate from snowmelt and glacier in Hindukush, Karakoram and Himalayan ranges feeding the Indus River System (Planning, 2010). Climate change is most likely going to affect both of these sources.

Pakistan will thus have to focus on increasing the effectiveness of water use in the agricultural sector due to the limited opportunity for increasing water supply. The Indus River System's current irrigation is incredibly ineffective. According to estimates, Pakistan wastes twice as much Indus water annually in watercourses as Tarbela Dam could hold. 60% of the water used for irrigation is lost in transit from the source to the field. Due to poor management and upkeep of a failing canal system, approximately 50% of the losses occur at the watercourse level and 33% occur at the canal level (Asim et al., 2022). The lower Indus Plain, especially the deltaic region, would be the area most negatively impacted by climate change.

It is becoming apparent that about 106 maf of its river flows are diverted to the canal system on average. The annual outflow to the lower reaches and the sea below Kotri was observed to have an average of about 35 MAF from 1976-1977 to 2002-2003 with the minimum being 0.8 MAF during 2000-2001(GOP, 2005). Water that discharges to the sea during the low flows years is below that which is necessary to arrest the seawater intrusion into the Indus deltaic region. Hence, apart from the issue of the volume, another process which is seawater intrusion - in 2010 it reached 60 km from the Indus river bank – would also affect the quality of the water (Khan et al, 2016).

The aerial issue will prove to be more complex when there is increased water cover. Fears as to how climate change may impact water resources are serious throughout the globe. Due to what seems to be 0.4 0C increase in temperature between 2007 and 2012, monitoring programs are being carried out in karst springs within Wallonia, southern Belgium and changes in the discharge of rivers owing to karst springs and impact of climate change on available groundwater is being investigated (Meus et al., 2014). Deriving from Yagbasan and Yazicigil (2012), this paper employed the Lake——Aquifer Simulation Model. Explored the impact of the climate change on the pre syllabic and post syllabic water levels of Mogan and Eymir Lakes, Central Turkey. They have forecasted very low lake levels in the case where management actions are not considered. The Iberian Peninsula will be directly affected by climate change since one would observe a reduction in Ground Water Resources (Samper and Pisani, 2015).

Precipitation and temperature impacts of these GCMs on Spain's Tortosa and Plana de La Galera alluvial aquifers were evaluated for the model periods of 2020–2050 and 2069–2099. These effects are likely to be realized in a form of elevation of mean sea level and decline in the process of groundwater recharge. Variations in mean annual discharge have also been predicted in another study carried out by Kabiri et al., (2015) concerning the Klang watershed in Malaysia. Doing a research on the major watersheds in China, it has also been determined that climate fluctuations in the upstream and downstream locations have an influence to the change in the hydrologic system (Lu et al., 2015).

The authors have identified coping mechanisms that include enhancing the hydrological system's balance by applying recharge mechanisms, conserving water in agriculture, and using treated urban sewage for environmental flows in rivers and wetland restoration.

Food Security and Agriculture

According to the food security condition Pakistan is not in a good position. According to the Maple croft food security risk index, it is a high risk factor 30 among 163 countries in the world (Maplecroft, 2024). River water is used to supply the largest irrigation system to the world to support agriculture dependent on canal irrigation. This may be true because river water is shrinking as ongoing threats to their drainage basins continue to work their magic. It will become even bigger because of climate change. Food security impact will be mainly expressed by the decrease in production yield of crops and agricultural produce, and adverse impacts on productivity and health of animals, as well as their repeatability. Despite the fact that crop yields differ quite sharply in the territory of Pakistan, climate change will only deepen the indicated discrepancies.

Figure 2: Climate change impacts on Agriculture (Somanas, 2024).

Schedules alterations of crop growth, or times for cropping, alterations in evaporation and transpiration and crop stress and chances in irrigation water requirements and its availability; seawater intrusion affecting the deltaic agrozone of the Indus basin have bearing on productivity of agricultural crops. Fluctuations in the amount and intensity of precipitation can also aggravate the situation of already cultivated, but problematic land for salinity, water logging, wind, and water erosion. It is estimated that 3-5 million hectares have been affected by wind erosion with about 40% irrigated area affected by soil salinity or water logging (GOP, 2011). Pakistan's ability to expand its area for crop production is severely limited.

The entire cost of salinity has been econometrically estimated to be between Rs. 30 and Rs.80 billion with averagely estimated Rs. 55 billion or 0.9 % of GDP in 2004. In Pakistan, the loss yield because of soil erosion is evaluated to be Rs: 15 billion each year; which is equivalent to 0.25% of the Gross Domestic Product. Global warming may also bring diseases, pests, and insect breeding at warmer and more humid climate conditions. Hypotheses shown extreme events that can occur and escalate thus contributing to production losses, examples being floods, drought, and cyclones. Consequently, livestock productivity also remains highly vulnerable to both, direct and indirect impacts of climate change. They are least prolific at high temperatures, and from heat on physiological reasons that lead to reduced meat and milk production. Also, heat and humidity will enhance disease outbreaks that are associated with climate change, and weather calamities such as floods, drought, heavy rains, hail storms, and cyclones will both kill individuals and affect the ecology systems and animals' habitats. The quantifiable indirect consequences shall include: decreased rangeland production and, consequently, availability and quality of fodder crops. This is especially alarming to Pakistan's growth plan since livestock subsector is a main contributor of 53.2% of the value added in agriculture and still has the potential to grow in the future (Khan et al., 2016).

In light of this, the Ministry of Climate Change and Environmental Coordination's annual policies not only address the pressing need for environmental conservation but also make a substantial contribution to the larger objective of ensuring Pakistani food security in the face of climate change.

OVERVIEW OF PAKISTAN'S CLIMATE CHANGE POLICY

When Pakistan found out that fighting climate change was such an essential task, it immediately started developing climate change policies and strategies. The country's first conclusive approach to climate change appeared in the form of the National Climate Change Policy (NCCP) adopted in 2012. They included the following; to mitigate the ''unfavorable consequences of climate change'' and to push forward ''sustainable development.'' The policy decoratively highlighted adaptation, mitigation, and skill development. The NAPCC builds on the NCCP. Well framed strategies are translated by the NAPCC into set goals. Currently being piloted across nine states, it offers methods of agricultural adaptation. The program focuses on water utilization, agriculture practices and alteration of the land use in case of vulnerability. In realizing the NCCP, Pakistan developed Framework for Implementing Climate Change Program in 2014. Given the risks posed by climate change, the FICCP developed a map for change. Pakistan has prepared the 2017 National Climate Change Policy covering the period of 2017-2030 with regard to global response and institutional development. This broad strategy covers research, capacity building, adaptation measures, vulnerability reduction and raising awareness and campaigns. While on one hand, it wishes to enhance global collaborations, on the other hand, its domestic goals are to improve frameworks against climate change. It identified key sectors: of the bioenergy sectors including agriculture, forestry, energy, and water. It then suggested measures of reducing emission and increasing resilience. In the same year, the federal government of Pakistan adopted the ATP for increasing farm yields throughout the country.

The policy valued processes for building competence, adaptation, and mitigation. The NCCP is expanded upon. Its techniques became concrete goals in the NAPCC. The NAPCC, in operation for nine states, focuses on adapting water, agriculture, and land use. It offers ways to enhance agricultural adaptation. In 2014, Pakistan created the Framework for Implementation of Climate Change Program in response to the NCCP. To tackle climate change, the FICCP created a thorough road map that encompassed research, capacity building, adaptation, alleviation, and awareness-raising.

The Pakistani government created the National Climate Change Policy (NCCP) 2017–2030 in 2017.This approach's main objectives were to encourage international cooperation, energize institutional frameworks, and integrate weather transformation challenges into improvement planning. It included important industries like forestry, energy, water, and agriculture and provided suggestions for lowering emissions and increasing adaptation. The Pakistani federal government has also used the Agriculture Transformation Plan (ATP) IN 2021 to increase the production and efficiency of the agricultural zone. Implementing and utilizing the technological breakthroughs required to maximize agricultural productivity is part of the ATP's practical goal. One innovation that the strategy facilitates the use of is precision agriculture, which improves the irrigation of inputs such as water and fertilizer to increase yields with a low level of pollution.

The Punjab Green Development Program is another capacity created by the Punjab government for launching green activities in the Punjab province and to meet any environmentally or climatically specific need of the Punjab province in 2018. The proposed program in sustainable agriculture attempts at achieving environmental objectives focusing on most of the aspects within the resource constraints. Such objectives include judicious use of water in the agriculture sector since Punjab is among the most agricultural sectors using high user water irrigation. This program creates incentives to enhance water saving technologies and provides incentives to farmers such as bonuses for measures such as lined water ways & laser leveling.

The National Water Policy formulated in 2018 is important for Pakistan in particularly for agriculture specifically due to the climatic changes leading to water stress. In particular, the policy is aimed at enhancing efficiency in the utilization of water in crop production through the encouragement of rational use of water. These are increasing water use productivity, expansion of a supply in the dry season of water to fields, and physical structures-small dams and reservoirs (Khadam et al., 2024). Clean Green Pakistan Initiative in 2019 is the total activity effective framework that deals with environmental issues including waste management, better sanitation, and water usage. Over the recent past there has been an extension of works under this initiative to improve the infrastructure of urban as well as the rural areas with a view of coming up with a better way of managing the environment. National Adaptation Plan being prepared in 2022-23 is to enhance the capacity to climate change impacts by adoption of sector integrated strategies for water resources including agriculture, and public health. This is in accordance with community adaptation as well as sustainable development approaches.

PAKISTAN'S CLIMATE CHANGE POLICY'S PRIMARY OBJECTIVES

Through its climate change policies, Pakistan aims at reducing vulnerability of its people and the environment to the increasing impacts of climate change. The country is on the process of seeking for the real measures of handling the effects still the country is on the process of finding the real measures to sustainability. Here's a more straightforward, human-centered explanation of the primary goals:

Preparing for Climate Challenges

Pakistan is dedicated to assisting communities in dealing with climate change-induced extreme weather events such as floods, heat waves, and droughts. The emphasis is on strengthening infrastructure and developing procedures that assist people adapt so that they can recover rapidly from disasters.

Pollution and Emission Reduction

The country's emission of greenhouse gases is being controlled in order to bring down the carbon footprint. This includes shifting to clean energy of origin from renewable sources like wind and solar energy, energy efficiency improvements in businesses, Transport and residential sector.

Promoting Sustainable Growth

Pakistan wishes to grow economically at the same time progressive efforts are being made for environmental conservation. This include the provision that development projects from scratch do not have any impacts on the surrounding environment and the future impact of climate change in development strategies and policies.

Disaster danger Management

In response to the increased danger of natural disasters caused by climate change, Pakistan is focusing on disaster preparedness and risk reduction efforts. This involves improving early warning systems, constructing flood barriers, and promoting drought-resistant farming techniques.

Worldwide Cooperation

Pakistan participates in worldwide efforts to combat climate change, including multilateral agreements such as the Paris Agreement. The country is also exploring for methods to tap global cash and resources to help with its own climate efforts.

Protecting Nature and Biodiversity

Climate change is threatening forest, animals and other natural resources in the country and Pakistan is trying to conserve them. In this respect, the country wants to reduce its carbon footprint and support the people in the region who depend on them.

Raising Awareness

Everyone in Pakistan needs to learn about climate change to support the country's efforts. The idea again is to help people recognize its significance to them and motivate them to reduce the effects, for instance, cut on the use of energy or funding to environmental activities.

Ensuring Fairness

Climate change impacts people differently. Pakistan's policies strive to help and incorporate disadvantaged populations, such as women and rural communities, in choices about how to address climate change.

At the heart of these objectives is a vision of a future in which the environment is safeguarded and people can live safely and sustainably wherever they are.

Pakistan's Climate Change Policy Implementation Obstacles

This in brief underpins the nature of challenges that climate change policies experience in Pakistan to fully deliver their set goals. In light of the continued research on contemporary global climate policy and the challenges

experienced in similar circumstances, several challenges could be pointed out as the factors inhibiting the sound implementation of climate policy in Pakistan.

Political and Economy Disharmony

Among every climatic hindrance one of the most crucial obstacles is the inability to harmonize climate goals with both the present economy and politics. Self-interests from the short-run often overwhelm long-run objectives, thus stagnating the framing of comprehensive climate change legislation. This is well elaborated in the international case studies, where economic growth is always given a higher priority than concerns for the environment (Biesbroek et al., 2011; Vogel and Henstra, 2015).

Lack of Political Will

Political commitment is a crucial factor, when it comes to the definition and choice of climate measures. However, political inertia as well as the lack of political leadership can stall or dilute climate action. This is well illustrated in countries where climate change is not given high priority and governments are slow to undertake large changes as these may be resisted by rent seeking groups (Biesbroek et al., 2011; Vogel and Henstra, 2015).

Bureaucratic Obstacles and Regulatory Complexities

The presence of bureaucratic barriers, such as sluggish decision-making, regulatory complexities, and inefficient administrative systems, can greatly impede the implementation of climate policy. These institutional difficulties impede timely and effective policy implementation, resulting in diminished impact (Howlett and Rayner, 2013; Gupta and Mason, 2014).

Financial constraints

A primary challenge to the execution of climate change programs is that most of the countries, especially those in the developing world, lack the cash they need to fund arising initiatives. No climate policies can be as successful as envisaged if adequate money for both the mitigation and adaptation programs are not allocated. This is so because there are no clear financial strategies, policies, and rewards for sustainable management and financing of development (Pelling et al., 2008; Hale, 2016).

Policy coherence and coordination

The problem of policy integration focuses on the fact that systematic and coherent policies are often developed in tactical organizational contexts by various agencies or sectors, and therefore lead to negative outcomes such as inefficiency and ineffectiveness. Incoherent policy means that various climate measures can intersect or duplicate activities and thus compromise their effectiveness and efficiency of climate intervention (Jordan and Lenschow, 2010; Jordan et al., 2015).

Socioeconomic Disparities and Equity Concerns

Climate policies may be fairly skewed to affect some vulnerable people; this will raise issues of justice and fairness. A policy that neglects the issue of differences in individuals' socioeconomic status could actually exacerbate existing inequality leading to an opposition and poor support (Paavola and Adger, 2006; Adger et al., 2005).

Lack of Scientific and Technical Expertise

Adequate scientific and technical understanding are required for developing and executing effective climate policy. In many cases, the lack of qualified experts or the restricted integration of scientific research into policy decisions results in suboptimal outcomes, with policies that are misaligned with the best available evidence (Sarewitz and Pielke, 2007; Gupta and Mason, 2014).

Public Resistance and Misinformation

However, many attempts at implementing climate policies are met with a degree of hostility because of lack of awareness or misunderstanding, or they are simply met with skepticism due to widespread misconceptions about climate change. Furthermore,-public participation and appropriate communication strategies is the key to eliminating this reluctance towards climate action (Lorenzoni et al., 2007; Bernstein, 2012).

Issues in Global Policy Compliance and Enforcement

Many international climate agreements suffer from ineffective compliance procedures and enforcement, especially when enforceable obligations are absent. This reduces the effectiveness of global frameworks such as the Paris Agreement, as countries may fail to meet their pledges without adequate accountability procedures (Young, 2010; Keohane and Victor, 2011).

All these complications point out the challenges of translating climate policy goals into reality. To address these challenges, a complex effort has to be carried out in the economic, political, social and scientific realms, and with sufficient political will and public support.

RECOMMENDATIONS FOR IMPROVING POLICY

According to the conclusions of the case study, Pakistan faces enormous hurdles in mitigating climate change, which affects not only its environment but also its socioeconomic development. The following are significant ideas for improving Pakistan's climate policy, emphasizing a human-centered, sustainable approach.

Proactive Climate Insurance for Agriculture

Introduce climate insurance policy for major agricultural products including cash crops, animals and fruits for Pakistan is crucial because the industry is vulnerable to climate change. These could possibly assist protect farmers economically from climate-related risks such as floods and their related disasters as well as droughts. If the intended targets of the stakeholders providing financial support are the rural and urban agricultural communities, then such risks would be minimized but for improvement in resilience.

Green Growth and Technological Adaptation

Predictably, Pakistan needs to make green development within the boundaries of efficient and sustainable strategy that would allow it to work on environmental issues and economical development simultaneously. To reduce importation of fossil fuels, governments should encourage the use of renewable energy sources that include solar, wind and hydropower investments. As indicated in the UNFCCC agreement, international technology transfer from Annex 1 countries will facilitate scaling up of clean technologies in key sectors such as industrial and power sectors electricity generation.

Strong institutional coordination and public-private partnerships

Partnerships are essential for effective climate change adaptation at all levels of government (federal, provincial, and municipal). This could be accomplished through strong institutional ties and public-private partnerships, which ensure that both the public and private sectors play a role in creating and executing climate-resilient policies.

Integrating Climate Adaptation and Mitigation

Climate change vulnerability cannot be ignored by any government program, from infrastructure to urban planning to development. Climate resilience should remain a priority for Pakistan’s national development framework and therefore should guide policy making at all levels.

Public Awareness and Education

Awareness campaigns are crucial for engaging various stakeholders, including farmers, vulnerable communities, youth, and policymakers, in climate action. The use of various communication channels, such as social media, films, public speeches, and workshops, can assist raise awareness about the effects of climate change and practical adaptation and mitigation strategies.

Climate-Resilient Infrastructure

Buildings, roadways, and urban centers should be resilient to extreme weather events such as floods, heat waves, and cyclones. The development of climate-resilient infrastructure, especially dams for water storage, is critical to addressing the mounting difficulties of water scarcity and flood control.

Increased Financial Commitment for Green Development

Sufficient amounts of money are needed to embark on climate adaption techniques. The period post COP 21 has created new opportunities for mobilizing domestic and international financial resources for green projects in Pakistan especially climate finance money of UNFCCC. The government should attempt to launch a national green fund for it to be accessible to enterprises, local communities and non-governmental organizations involved in climate projects**.**

Because of the fast changing climate, the government should adopt and/or introduce policies that are flexible and adaptable. This includes detailed assessments of climate policy with the goal of keeping them effective with changing environments. Bringing in experts in climate science, economics and policy will be paramount in crafting formulations for tackling the problem. There is need to ensure that climate change policies have a corresponding mitigation and adaptation monitoring and evaluation frameworks. This will ensure that all climate adaptation and mitigation programmers laid down run their course and accomplish their objectives, to enable for essential change.

To summarize, addressing climate change in Pakistan requires a comprehensive approach that incorporates scientific, political, economic, and social components. By implementing these recommendations, Pakistan may not only mitigate the negative effects of climate change, but also contribute to global climate goals, guaranteeing a more sustainable and resilient future for its citizens.

CONCLUSION

Pakistan is not a significant emitter of greenhouse gasses but is among the most vulnerable countries at the climate’s mercy. As many as these symptoms are manifested in the form of drastic changes such as droughts and

floods, management of climate change has become a national imperative, not a luxury. This page outlines many impacts of climate change likely to occur in many ecosystems and sectors hence dealing with most aspects of sustainable development. Climate change is expected to deliver a negative blow on economy insofar because it impacts the production of food, energy, and water and important sectors such as forest, agriculture, fishing, and cattle. Apparently, the Pakistani government has aimed at implementing strategies at domestic as well as international levels to address the issue of climate change to the-byte.

Finally, this paper has outlined the problems and failures that prevent the effective realization of a climate change policy in Pakistan. Among the challenges one has been deemed as political will and policy attention, meaning that the decision makers need to be keener. The difficulties arising from low institutional capacity and this lack of harmonization goes to show just how important the establishment of governing institutions and procedures are. Economic difficulties and the clash of several development goals hinder the climate change policies, pointing to the importance of comprehensible approach that integrates climate change issues into the sectoral goals. The methodologies and activities used in this course allowed Pakistan to learn from various case studies and examples which showed the key challenges and experiences of policy implementation. Making climate change a main priority in the policy memo and approving the changes that are proposed might help Pakistan to become more climate ready, reduce greenhouse gas emission, and contribute to global efforts toward climate change mitigation. This can only mean that governments and other stakeholders must act quickly in countering climate change. The findings of the research study make a call for action, ordering decision-makers to put climate change first and ensure that laws on climate change in Pakistan are effectively implemented. In this way, the Pakistan state, and wider society might set about how to build a future that is more resilient for the people of Pakistan as well as the rest of humanity.

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