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IMPACT OF CLIMATE CHANGE

PAKISTAN'S EXPERIENCE WITH CLIMATE INDUCED DISASTERS

A Policy Dialogue



Executive Development Institute
National School of Public Policy
Government of Pakistan - Lahore






Editorial Board

Dean EDI	Mr. Ahmad Nazir Warraich
Director EDI	Ms. Tayyeba Kayani
Research Associate	Ms. Ayesha Akbar
Research Fellow	Dr. Rahil Irfan Ahmed

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Acronyms

CERF	Central Emergency Response Fund
COP	Conference of the Parties
CSR	Corporate Social Responsibility
CSRM	Climate-Smart Risk Management
DDR	Disaster Risk Reduction
DRM	Disaster Risk Management
EDI	Executive Development institute
EPA	Environmental Protection Agency
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GSP	Generalised Scheme of Preferences
INSARAG	International Search and Rescue Advisory Group
IPCC	Intergovernmental Panel on Climate Change
MDB	Multilateral Development Bank
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NDMA	National Disaster Management Authority
NFPP	National Flood Protection Plan
NSP	French National Institute of Public Service
NSPP	National School of Public Policy
OCHA	Office for the Coordination of Humanitarian Affairs
PC	Planning Commission Form
RCP	Representative Concentration Pathway
RCP3PD	RCP 3 Peak and Decline
SDPI	Sustainable Development Policy Institute
UN	United Nations
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America



Rector's Message

The National School of Public Policy is the premier national institution for training of civil servants in Pakistan. The training methodology of the School as followed by both the National Management College and the Executive Development Institute (EDI) aims at fostering an environment of intellectual freedom amongst participants for investigative analysis and a genuine desire to seek knowledge. The overarching aim of NSPP is to improve the quality and effectiveness of public policy and its implementation as well as the effective provision of executive education through policy dialogues, webinars and trainings.



EDI has been exhibiting a dynamic approach which is reflected by the consistent effort for bringing the public and private sectors on the same forum to exchange ideas regarding various aspects of national policy. It focuses on the capacity building of leaders and executives of the private and public sectors for meeting the objectives of pressing public policy issues of the country. The programs at EDI aim at enhancing the understanding of executives of the public and private sectors in the realm of policymaking and its implementation in order to optimise their effectiveness and to prepare them for their future responsibilities and new management roles.

In our drive to address public policy issues, we have made another successful effort through a Two Days' Policy Dialogue on the 'Impact of Climate Change: Pakistan's Experience with Climate Induced Disasters' to sensitise Participants about the seriousness of the climate change challenge amidst the backdrop of the 2022 floods in Pakistan.

We are aware of the fact that climate change is a global issue now. The international community is also facing climate-related challenges and erratic weather patterns heralded by more frequent hurricanes, snowstorms, floods, etc. Pakistan faces a serious challenge as it is amongst the 10 most vulnerable countries of the world due to its unique location and topography which is evident from the increased frequency and intensity of floods, droughts and heatwaves which have exposed its people to grave dangers and a serious risk of survival.

Pakistan contributes only about 1% to the global emission of greenhouse gases but is paying a heavy cost on account of frequent climate catastrophes. Yet, Pakistan's capacity to seek climate justice and financing also poses challenges on its leaders and policymakers.

This Policy Dialogue aimed at understanding the challenge of climate change for Pakistan and to generate debate on mechanisms that can facilitate the process of adaptation, mitigation and resilience. The themes of the Dialogues were carefully selected to cover salient aspects of climate change such as climate science, adaptation & mitigation, awareness, sectoral analysis, climate financing & negotiations.

It gives me immense pleasure to share the Report of the Dialogue which is being disseminated to guide and inform policy and its implementation of the useful discourse from seasoned climate experts regarding the challenges faced by Pakistan.



Executive Summary

Executive Development Institute (EDI) of the National School of Public Policy (NSPP) is a leading public sector institute and conducts short trainings, webinars and policy dialogues. In this regard in January 2023, it held a two days' policy dialogue on "Impact of Climate Change: Pakistan's Experience with Climate Induced Disasters". The floods of 2022 created havoc in Pakistan resulting in heavy loss of human life, cattle and infrastructure. EDI, in keeping with its tradition of holding public policy dialogues on issues of current vital importance held this session on 26-27 January, 2023. An attempt was made to cover all important aspects related to the topic and experts and practitioners were invited to dilate upon the challenges faced by Pakistan.



The need to hold a Policy Dialogue on Climate Change is crucial as there has been a steep change in global climate since the mid-nineteenth century which has resulted in a consistent rise in temperature. The occurrence of worldwide extreme weather and catastrophes such as droughts, fires, floods, mudslides, and storms has been alarmingly high. If climate keeps on changing at its present pace, costs will continue to rise and pose formidable risks to global food security, water, and health. Pakistan has also experienced erratic weather changes over the years and the hottest weather in 2010 to 2019. Such high temperatures are a serious risk to life and socio-economic activities and for this reason this is also an issue of national security.

Climate change imperils availability of food and water. It poses serious risks to industry and energy and adversely impacts economic and social indicators. As a result of such changes, there is conflict due to scarce resources and escalating demographic pressures which in turn leads to chaos and social unrest. There is also an increase in various kinds of migration due to loss of jobs or security. In this regard, the pressure to accommodate migration compelled by internal displacement tends to create instability besides severely constraining limited resources. The resulting constraints between the displaced and local population can be a source of social strife and conflict.

It is important to note that although Pakistan emits a small number of emissions, it is still paying a hefty human, social and economic cost due to recurrent events of globally induced climate change. Over 80% of water supply is attained by the melting of glaciers which falls into the rivers. However, due to climate change, water flow in rivers is falling in July and August but is increasing at the beginning of the year which will affect all cropping patterns and result in a lack of water availability when crops need it the most.

The need for effective international negotiations with thorough preparation and stakeholder engagement is therefore essential. There is a need for a swift agreement on necessary steps for limiting temperature rise as the current climate change can escalate into a climate crisis.

As a developing country Pakistan faces difficulties in securing climate finance due to limitations of the international finance system. The need for Pakistan to tap into available funding mechanisms, foreign investment, and the growing international carbon market is necessary to ensure that Pakistan can cope with the challenges being faced. Mitigation and adaptation measures are required both in general and in particular reference to particular areas like agriculture, water, and health. The need for eco-friendly industries, energy efficiency, water management, federal-provincial harmony, public-private partnerships and integrated policies for effective climate action is also required. Pakistan also needs to vigorously campaign for more climate financing while utilising existing funds more efficiently. There is a need for anticipatory governance and climate policy reforms along with adoption of global best



practices to tackle the risks and vulnerabilities being faced. In this regard, the need for local resourcing, insurance coverage and transitioning to disaster risk reduction is necessary. Overall, Pakistan must upgrade its preparation to address intensifying climate disasters through integrated governance, capacity building, and sustainable development.

Effective climate governance and adaptation is crucial for Pakistan to address current and future climate change challenges. This implies that the government should formulate policies in tandem to enhance cooperation between departments as well as to maximise the co-benefits and properly coordinated climate action. These measures are required to create powerful synergies that result in multiple positive non-climate benefits such as improved biodiversity, job creation, reduced inequality and improved public health.

Mr. Ahmad Nazir Warraich

Dean

Executive Development Institute

National School of Public Policy

Climate Science: How and Why? Impact on Pakistan

Dr. Imran Khalid

Dr. Imran Khalid is a Climate and Sustainability expert with over 20 years of wide-ranging experience in the academic, non-profit, governmental, and private sectors. Currently, he is serving as Director of Governance and Policy at World Wide Fund for Nature (WWF-Pakistan).

Dr. Imran's work focuses on regions and communities most vulnerable to environmental degradation and climate change. He is a Fulbright scholar who holds a Ph.D. in Environmental and Natural Resources Policy from the State University of New York College of Environmental Science and Forestry, Syracuse, New York



Dr. Imran Khalid explained the science of climate and current patterns associated with this phenomenon with suggestions to address issues related to the climate with effective governance.

The Concept and Causes of Climate Change

Climate Change has been defined by the United Nations Framework Convention on Climate Change (UNFCCC) as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable periods"¹. In this context, the Speaker drew attention to the fact that in order to understand climate change, it is important to understand two concepts: the Carbon Cycle and the Water Cycle.

With regard to the Carbon Cycle, carbon dioxide levels add up to the layers in the atmosphere when there is decomposition of fossil fuels from industrial fuel combustion or animal and plant respiration. In recent centuries, human activities have been responsible for the rapid increase in global temperature and has posed a threat to the survival and sustainability of animal and plant life. With the onset of the Industrial Age and with more activity in the sphere of coal mining, air & land transport, oil and fertiliser industry, the reliance on fossil fuels such as coal and petroleum products has increased manifold and multiplied the ratio of Green House Gases (GHGs) in the atmosphere. As fossil fuels contain Carbon Dioxide and Methane, the emission of these gases causes high temperatures and in turn, global warming. The Speaker went on to explain that with increasing emissions, different layers of greenhouse gases are created in the atmosphere. Resultantly, the infrared rays that come from the Sun get absorbed instead of being repelled and cause global warming.

Regarding the Water Cycle, it is common knowledge that water evaporates from the ground to the atmosphere and then flows back in the form of rainfall and snow etc. Fluctuation in any of these patterns have a serious impact by affecting the pattern of precipitation, raising sea levels and causing floods, tides and, glacial melting etc.

1. United Nations Framework Convention on Climate Change (UNFCCC, Article 1)

Cause for Concern

The Speaker stated that there is an unprecedented spike in the concentration of greenhouse gas' emissions, which has resulted in a rise of global temperature by 1.2°C compared to the pre-industrial era. As per projections, if the same trajectory of emissions is followed, the temperature may cross 2.6°C which will seriously endanger living beings on the planet. It is important to note that the concentration of carbon dioxide was 320 parts per million (ppm) in the year 1960, which has risen to around 420 ppm in 2020. Even if the concentration had hovered at 350 ppm, it would not have been sustainable for living beings.

These indicators predict that with a rise in temperature, regions with already high temperatures would become hotter while cold places would have mild weather. Such variations would affect countries differently. For instance, moderate weather in Canada will be ideal for agriculture and tourism but for countries in South Asia, where temperatures already soar in summer, the impact can endanger life seriously posing risks to water and food security.

Pakistan stands out as being amongst the most vulnerable countries due to its geographical positioning. Although Pakistan's contribution to GHG is only 1%, it is ironic that the country is one of the biggest victims of climate change and has continuously been affected in a variety of ways

Climate change has caused extreme weather leading to calamities across the globe in recent years. The Speaker called attention to the fact that if the weather of the last 40 years is compared with the last two centuries, the occurrence of worldwide extreme weather and catastrophes such as droughts, fires, floods, mudslides, and storms has been alarmingly high. He said that the extreme weather disasters are estimated to have cost the global economy \$2.5 trillion in the last decade alone, which is an increase of almost \$1 trillion over the last ten years compared to the previous decade. If climate keeps on changing in the same way, then costs will continue to rise and pose formidable risks to global food security, water, and health.

Global Legislation

The Speaker apprised about various international initiatives for combatting the challenges confronted by climate change ranging from its mitigation, control and financing. In this regard, the first attempt at the level of the UN to assess the scientific and socio-economic impact of climate was taken by establishing the Intergovernmental Panel on Climate Change (IPCC) in 1988. Another important framework includes the United Nations Framework Convention on Climate Change (UNFCCC) which was adopted at the Rio Conference in 1994 to stabilise greenhouse gas (GHG) concentrations in the atmosphere. Moreover, the First Conference of Parties was held in 1995 and the Kyoto Protocol was signed in 1997. Thereafter, in 2015, the Paris Climate Agreement was materialised with the long-term goal of restricting the rise in global average temperature to well below 2°C above pre-industrial levels.

The Paris Agreement was in fact the first ever acknowledgement that called for a strict target to control the rising temperature. The Agreement and subsequent global legislation have aimed to set targets but also to track and report these targets on a periodic basis with transparency and accountability so as to limit the increase of carbon emissions and control temperature rise at the level of 1.5 °C. Of these major initiatives, there have also been serious efforts to introduce initiatives to support climate action with financing where, as per recent initiatives, developed countries are to mobilise \$100 billion per year until 2025 under the Green Climate Fund, Small Grants Programme and Loss and Damage Facility.

Climate Change and Global Responsibility

The Speaker stated that climate change is an international phenomenon and every country is responsible for curbing its adverse impact. It is pertinent to know that China has now crossed the United States as being the largest emitter of GHG. Current statistics indicate that China contributes approximately 25% in GHG emissions as compared to the USA, which contributes 20%, followed by the European Union, India, Russia, Japan, and Brazil, etc. While some countries have a lesser contribution to GHG emissions, the challenge is not lessened as it is the cumulative effect of carbon emissions that makes a significant overall contribution in climate change. The Speaker was of the view that being a lesser emitter does not absolve a country of its responsibility to curb individual emissions and therefore, every country should play its part.

The Impact of Climate Change on Pakistan

The Speaker explained that the phenomenon of climate change is based on many uncertainties therefore, it is difficult to make accurate predictions, which is evident from the recently experienced erratic weather patterns and rising frequency of global climate disasters. In this regard, Pakistan stands out as being amongst the most vulnerable countries due to its geographical positioning. He stated that although Pakistan's contribution to GHG is only 1%, it is ironic that the country is one of the biggest victims of climate change and has continuously

Extreme weather disasters have been estimated to have cost the global economy \$2.5 trillion in the last decade alone which is an increase of almost \$1 trillion over the last ten years compared to the previous decade. If climate keeps on changing in the same way, then costs will continue to rise and pose formidable risks to global food security, water and health

been affected in a variety of ways. As an example, he cited that the floods of 2022 devastated the country's economic and social architecture, leaving thousands dead and millions homeless. If the prediction of temperature reaching 2.6°C turns out to be true, there will be cataclysmic repercussions for Pakistan as it is straddled in the North by glaciers and has a major river system flowing throughout the length and breadth of the country. The likelihood of glacial lake outbursts, frequently persistent rainfall, floods, droughts, heat waves as well as changing seasons and sea level rise will be extremely high in addition to increased vulnerability to epidemics from dengue, locust and other epidemiological prospects. Extreme weather conditions and its resultant impact will undoubtedly devastate the country and particularly impact the vulnerable poor, elderly, infants and children; those with pre-existing medical conditions and the mentally ill; and people with outdoor jobs.

Recommendations and Way Forward

Continue Vigorous Campaign for Loss and Damage Financing

- Pakistan should continue to make a strong case for Loss and Damage Financing in international climate negotiation forums such as COPs
- It should align with the Climate Vulnerable Forum

Prioritise and Mainstream National Level Adaptation

- Pakistan should develop a National Adaptation Plan through a comprehensive stakeholders' engagement process
- The plan should be followed by sub-national, district, and tehsil-level plans

Develop an Effective Local Government System to Map Climate Risks and Vulnerabilities

- Prioritise the development and retention of a functional local government system to enhance the capacity of local communities to perceive and address risk and respond to crises quickly
- The participation of local communities i.e. community-based organisations must be ensured in climate change risk assessment and management
- Local-level plans should include localised hazard and risk assessment information that can be dovetailed with development planning

Early Warning Systems

- There is a need for efficient early warning systems for vulnerability assessment and risk management at both national and local levels

Address Institutional Governance Issues

- Strengthening institutional governance by establishing an effective system of communication and coordination among relevant agencies
- Capacity building of stakeholders needs to be encouraged to fill capacity gaps

Incorporate Nature-Based Solutions in Development Paradigm

- Future infrastructure and development projects must incorporate nature-based solutions/ecosystem-based adaptation and green infrastructure approaches as; Rehabilitation of degraded riparian zones, development of riparian corridors along rivers, maintenance of natural flow paths through streams and canals, and Rehabilitation of natural wetlands

Address Vulnerabilities of Most Disadvantaged Communities

- Prioritise Communities that are more prone to being impacted by the effects of climate change with a particular focus on women, children and the elderly
- Include developing of contingency plans to protect vulnerable populations that have zero capacity to protect themselves

Introduce Insurance Against Loss

- Cash payments by the government are an unsustainable model in the context of increasing extreme weather events therefore, insurance mechanisms should be introduced for household losses and farm losses

Community Engagement Programmes

- There is a need to develop community engagement programmes to build the capacities of vulnerable communities as first responders

Climate Catastrophe: Disaster Mapping of Recent Flooding and Heavy Rainfalls in Pakistan

Ms. Aisha Khan

Aisha Khan has over 20 years of experience in development work. As Founder & Head of the Civil Society Coalition for Climate Change & Mountain and Glacier Protection Organization, she works at the community and policy level to strengthen climate action by supporting inclusive and participatory practices that promote social, ecological and democratic equity. She is a member of the Board of Directors of several organizations and provides expert advice on climate change related adaptation and mitigation challenges. She is currently serving as the Convener of the Working Group on Climate Security at the Strategic Policy Planning Cell, National Security Division. She is also part of the External Advisory Council of the World Bank on developing the South Asia Region Climate Change Action Plan (2020-2025) and a non-official member of the Pakistan Climate Change Council reconstituted in 2022. In 2019 she was awarded the Bright Award for Environmental Sustainability at Stanford University. In 2021 she was awarded with the Rank of Officer in the National Order of Merit by the Government of France.



The Speaker stated that Climate Change is a multidisciplinary issue which affects almost all sectors of the country with significant consequences and highlighted the issues and challenges associated with Climate Change, especially in the context of Pakistan which she categorised as 'a grave challenge for human security and social development'.

Pakistan's Topographical Peculiarity

The Speaker apprised that Pakistan has a unique topography being home to tallest mountain ranges such as the Himalayas, Hindu Kush and Karakorum, which is home to the largest and densest collection of glaciers outside the North Pole. She informed that around 270 million people rely on resources that emanate from this mountain system directly, while 1.8 billion people rely on it indirectly. Therefore, anything that disrupts this region will not be localised to this region but will have national consequences.

The Speaker then went on to highlight details about the Coastal Belt of Pakistan and stated that 10 % of Pakistan's population lives in the vicinity of this vast coastline. She informed that 20% of the region is relatively developed and houses 40% of Pakistan's industry therefore possible disruption caused by rising sea levels, flooding or climactic changes is likely to severely impair economic activities in this area.

The Speaker also drew attention to the fact that Pakistan relies heavily on the Indus Water Basin System as the sole system of water sources. Approximately 40-50% of water comes into the Indus River from snow and glacier melting. She highlighted that any rise in temperature will potentially lead to accelerated melting with greater chances of disaster, given the current trend of greenhouse gas emissions.

Climate Change & Socio-Economic Challenges

The Speaker informed that Pakistan is among top ten countries of the world that face climate-induced disasters and floods which are routinely affecting on average about three million people annually. As it is, climate change and natural disasters are posing a major threat to Pakistan's development as the country faces up to approximately \$3.9 billion in annual losses and is increasingly exposed and vulnerable to floods, cyclones, droughts, heat waves, uncertain monsoon patterns as well as sea level rise, which is likely to raise this figure even further in the future. The Speaker drew attention to the floods of 2022, where 33 million people were adversely affected due to massive flooding.


The Speaker said that future disasters and the impact of such floods, droughts and heatwaves could cause an annual loss of 10-13% to the GDP, while climate-induced damage could increase rural poverty up to 8.4% by 2050 relative to the baseline. The economic losses have been estimated to be approximately \$15.2 billion, whereas the estimated need for Rehabilitation is \$16.3 billion.

The Speaker informed that Pakistan has experienced the hottest weather in the decade of 2010 to 2019, which has caused a severe impact on the living conditions of the country. She said that unfortunately, such disasters are going to be a new normal for Pakistan due to global warming. She stated that such high temperatures are a serious risk to life and socio-economic activities and for this reason it is also an issue of national security. When climate change imperils availability of food and water or poses a risk to industry or energy supply, the country's economic and social indicators are adversely impacted. As a result of such change, there is conflict due to scarce resources and escalating demographic pressures which in turn lead to chaos and social unrest. There is also an increase in various kinds of migration due to loss of jobs or security. In this regard, the pressure to accommodate migration compelled by internal displacement tends to create instability besides severely constraining limited resources. The resulting acrimony between the displaced population and locals can be a source of social strife and conflict.

Instituting Anticipatory Governance

Due to Pakistan's climate change vulnerability and recent catastrophic experience with climate-induced emergencies, the Speaker highlighted the need to vigorously campaign for climate justice, finance and a fair share in the loss and damage funds because an effective response to climate change cannot be undertaken without such measures. There is a need to assess the needs and required interventions in order to effectively cater to the challenges faced by the country. She opined that some of the malaise hindering appropriate action is the limited capacity of the bureaucracy in Pakistan which has tremendous competence and capacity but is The Speaker said that the impact of flood, droughts, and heatwaves could cause an annual 10-13 % loss to the GDP while climate induced damage could increase rural poverty by 8.4% by 2050 relative to the baseline. These factors can lead to social and economic upheaval in Pakistan. often held back due to political interference, fear of reprisal or indecision that prevents it from acting promptly. In this regard, she said that it is unfortunate that the World Bank provided Ecosystem Restoration Funding to Pakistan, but the National Disaster Risk Management Fund did not utilise it. The Speaker also cited the example of the International Green Climate Fund which encourages civil society organisations to take measures for disaster risk reduction but has not been fully utilised by us. She stressed the need to operationalise the National Climate Act which although passed in 2017, is still without an Authority. It is envisaged to be an apolitical entity having all stakeholders, yet there seems to be inaction for its institution.

The Speaker then spoke about the need to reinvest resources so as to encourage cross-sectoral coordination amongst various stakeholders involved in the process of climate adaptation and mitigation. She highlighted the need for enhancing the capacity of stakeholders as well as strengthening coordination



between relevant ministries, departments and line departments. An effective governance framework is the need of the hour so as to better prepare the governance structure to deal with any disasters while being mindful of guiding principles which are 'pro-poor, pro-vulnerability and pro-gender'.

Anticipatory governance which takes account of regional and social peculiarities is necessary as Pakistan is not geographically or socio-economically homogenous. The Speaker suggested that the objectives of a robust anticipatory governance framework include building a climate-resilient infrastructure with plans for adaptation, mitigation, rescue and recovery, along with a proper post-disaster needs assessment, which may be conducted impartially by donor agencies like the World Bank, Asian Development Bank etc.

The objectives of a robust Anticipatory Governance Framework includes building of a climate resilient infrastructure with plans for adaptation, mitigation, rescue and recovery along with a proper post-disaster need assessment to be conducted impartially

Campaigning for Climate Financing

The Speaker stated the irony that although Pakistan contributes less than 1% to the emission of Greenhouse Gases, it has still paid a disproportionately high price for global climate-induced disasters. The world is in the grip of high levels of GHG emissions, but Pakistan is bearing the brunt despite its low contribution. The trend of rise in global emissions of GHGs is still alarming despite the Paris Agreement. Greenhouse gas levels have not been reduced. For instance, in the Paris Conference of 2015, the parts per million were 416. However, they stood at 420 in January 2023.

In light of these realities, Pakistan, amongst the most vulnerable countries, must campaign for climate financing with renewed vigour. The Speaker went on to state that although various climate financing pledges were made by multiple donors on different occasions to Pakistan yet the money received comprised mostly of loans. For instance, the Geneva Donor Conference pledged \$10 billion but out of this, \$8.8 billion is in the form of loans. Another interesting aspect is that monetary pledges of multilateral organisations which were committed previously are now being represented as new money. Similarly, it has been observed that the international response to recent floods in Pakistan did not take into account the long-term damages and intergenerational losses that the country suffered as donors like the European Union focused only on emergent damage & loss needs. It is important to note that due to poverty and the already limited capacity of displaced populace, the need for assistance goes way beyond only loss and damage support due to its multiplier effects.

The Speaker emphasised that due to these factors, Pakistan needs to take proper stock of its challenges in order to advocate its case effectively and also streamline the manner of disbursement. She pointed out that at times the money is not released on time or in the manner that enables an effective climate response.

The Speaker also drew attention to the fact that Pakistan's success rate in acquiring access to climate financing has been lesser than that of India and Bangladesh. She stated that both countries have been able to secure \$528.9 million and \$374.0 million respectively whereas Pakistan has been able to secure only \$131.0 million. She suggested that Pakistan should be cognizant that competing demands in access to finance have been accelerating due to the melting of glaciers, lake outbursts, floods and riverine floods in South Asia. Pakistan therefore needs to be vigilant with a robust national and international response framework in order to deal with pre and post disaster scenarios.

Recommendations and Way Forward

Systematic Changes to Address Underlying Vulnerabilities

- Establishing a Climate Authority, as mandated by the 2017 Climate Act, which has yet to be implemented, is of paramount importance
- Improve diligence in the processes of planning and response to safeguard vulnerable sectors

Capacity Building in Governance

- Capacity building of government entities and ministries in Climate Change as a technical subject
- Improve interdepartmental coordination
- Setting up a dedicated institute for climate-induced disaster management for overseeing the planning, implementation and regular monitoring of issues related to climate change

Awareness Campaigns

- Strengthen advocacy through the media, research programmes and the education sector in improving awareness of climate change
- Improve awareness of challenges due to climate change to highlight the need for climate planning and monitoring mechanisms
- Sensitise government and civil society at the grass root level, where the co-creation of policies should be prioritised with the buy-in of people

Developing Resilience in Development Planning

- Focus on a vision of climate resilience and sustainable recovery in Pakistan by investing in human capital, including addressing underlying vulnerabilities such as poverty, population growth, displacement of people, and lack of access to schools, health services, jobs and municipal services
- Invest in gender mainstreaming, human capital development, and ingraining climate-friendly social habits to ensure the entire population is mobilised and everyone plays their role
- Tackle issues like unplanned urbanisation, mainstream the role of women in rescue relief efforts, and eliminate vulnerabilities by investing in human capital and women's empowerment, especially in mountain areas where reluctance exists.

Enhancing better Utilisation of Funding

- The funds from diaspora of Pakistan should be included into the recovery process
- Funds should be managed by an apolitical authority that has credibility and should have a fallback position for foreign direct investments and from the diaspora
- Adaptations should be anticipatory and a resilience framework should be developed
- The funds received from Green Climate Funds should be utilised transparently

An Anticipatory Framework of Institutional Arrangement

- Pakistan's increasing vulnerability to climatic catastrophes requires an anticipatory approach to preparedness rather than waiting for actual occurrences of climate events, as the scientific basis already indicates different potential pathways for disasters
- Strengthen policy and governance mechanisms across the 4Rs - resilience, recovery, Rehabilitation, and reconstruction - to address Pakistan's increasing vulnerability to climatic catastrophes
- Policy guidelines should not be limited to paper and require monitoring and evaluation through community observations and third-party assessments to translate commitments into action beyond the paperwork

Global Best Practices

- Adopt global best practices like Bangladesh's successful resilient framework that has gained donor credibility to ensure resilience and emulate models that work

Projections & Sectoral Analysis of Climate Change: Impact on various Sectors

Dr. Fahad Saeed

Dr. Fahad Saeed is part of the Climate Science and Impacts team at Climate Analytics, working as the regional lead for South Asia and the Middle East. He has been working with Climate Analytics since 2017 in different roles and capacities working on climate modelling and data, regional climate science, and providing scientific and strategic advisory support to Least Developed Countries. He is currently based in Islamabad, Pakistan.



His expertise encompasses climate modelling and its associated risks and impacts. He has previously worked with Max-Planck Institute for Meteorology (MPI-Met) and Climate Service Centre (GERICS) under Helmholtz-Zentrum-Geesthacht (HZG), in Hamburg, Germany. He was Climate Change Advisor and Head of Environment and Climate Change Unit at the policy think tank, Sustainable Development Policy Institute (SDPI), Islamabad. He holds a Ph.D. degree in Earth Sciences from MPI-Met, Hamburg, Germany with a focus on Regional Climate Modelling, mainly working on the South Asian region.

Dr. Fahad Saeed discussed the concept of climate science to familiarise the audience with climatic changes that impact different sectors of Pakistan. Given the severity of the challenges, he emphasised the need for a robust and responsive governance in order to anticipate climatic variations and develop climate systems effectively.


Climate Change and Production Methods

The Speaker spoke about the influence of the industrial revolution which has proved to be no less than a watershed in impacting global climate. Due to changes in production methods, chemical emissions increased to such a degree that they allowed radiations to block the earth's temperature and caused the ozone layer to thicken. From 1850 onwards, warming up of the earth's atmosphere has continued unabated due to fossil fuel-intensive production which continues unabated.

Pakistan's Topographic Terrain & Vulnerability to Climate Change

The Speaker apprised that there are many types of climatic zones in Pakistan including arid, semi-arid, humid areas and highlands. Its latitudinal extent is 1800 kilometres and has the second tallest peak in the world. Almost 70% of Pakistan is classified as arid or semi-arid where precipitation is low and mostly occurs in the North.

The Speaker emphasised that Pakistan is amongst the ten most climate change impacted nations in the world. It lies close to the cyclonic region of South Asia and has a distinct precipitation system of monsoons. Its system of precipitation is crucial for the accumulation of snow in the northern regions and for its rivers to run. However, with increasing heat waves, precipitation is likely to rise with the current amount of warming of 1.1 °C, which is likely to lead to catastrophes.



According to the Speaker, Pakistan has been experiencing drastic climatic challenges since 2010. Precipitation in Sindh and Baluchistan has increased far more than its last ten years average which poses a grave challenge for pre- and post-disaster governance in view of limited technical and economic capacity. He said that due to higher temperatures in Pakistan, flooding has increased while heat waves are intensifying and becoming longer in duration. These factors will continue to impact Pakistan's governance and economy. As it is, the flood of 2022 has cost a lot to the weak economy of Pakistan.

Climate Change and Sectoral Risks

Food Security

The Speaker then observed that it is common knowledge that Pakistan only emits a small number of emissions, whereas the top emitters include countries like the United States and India. Yet, Pakistan is paying a hefty human, social and economic cost due to the recurrent events of globally induced climate changes. The Speaker voiced his concern over the challenges confronted and mentioned the perils associated with future food security especially keeping in view of the fact that Pakistan is a semi-arid country whose main catchment areas are being adversely affected. This is worrisome in a country where over 80% of water supply is attained by the melting of glaciers into the rivers. Due to the climate change, water flow in the rivers is falling in July and August, but it is increasing at the beginning of the year, which will affect all cropping patterns and result in a lack of water availability when crops need it the most. This shift is likely to have an adverse impact on water availability and food security. As seen from recent trends, the agricultural sector has suffered a fall in wheat production while the yield from maize production is also falling.

Health

The Speaker discussed the effects on health due to rising temperature using two different methods of measuring temperature i.e. dry and wet-bulbs. He said that the wet-bulb temperature measures the amount of humidity in the air while dry-bulb temperature uses a mercury thermometer to measure the temperature of air. It is an indisputable fact that both methods have indicated that the overall temperature of every region of Pakistan from the coastal belt to northern regions is rising. He said that rising temperature adversely impacts the social and economic indicators of the country especially as human productivity can work best till 32o centigrade. If that limit is exceeded, artificial cooling is needed which is excessively costly.

In this regard, some areas in Pakistan have been recorded to have had the highest temperature in the world thrice in the last few years. If the same trajectory of hot temperature remains, then the number of labour hours will drop, and Pakistan would suffer immensely due to loss of labour productivity.

Using Scientific Methods for Effective Climate Governance

The Speaker stated that climate is being assessed with cutting-edge technological models which have scientifically concluded that human activities, including the combustion of fossil fuels, are responsible for climate change. He explained that climate modelling is highly complex due to the interaction of natural landforms and production trends.

Climate modelling is now being used to predict future trends related to climate change and are mostly prediction-based. The Speaker explained that the calculations regarding temperature are based on four types of radiative forces (electro-magnetic waves which are called RCP6, RCP4.5, RCP3PD/RCP2.6 and RCP8.5). These four scenarios provide information for emissions and according to the least restrictive

scenario which is RCP2.6, temperature is nearing 1 °C by the end of this century, whereas RCP 6.0 prediction for temperature is 2.5°C, while RCP 4.6 predicts it at 2 °C, and as per RCP 8.5 temperature is reaching 4.2°C. The Speaker stated that all meteorological models for measuring temperature predictions are unanimous in predicting that the global temperature is rising. This implies that change in any kind of radiative force which would increase global temperature would ultimately impact Pakistan more severely due to its geographical position being highly vulnerable to climate change.

The Speaker stated that although Pakistan's current technical capacity is limited to anticipate climate trends accurately, which in turn is a cause for exacerbating uncertainties, but based on global models, Pakistan is likely to experience more intense disasters due to climatic variability and its geographic positioning. In this situation, climate governance must incorporate innovative energy-mix strategies to reduce reliance on fossil fuels and the amount of emissions that are released into the atmosphere.

All meteorological models for measuring temperature predictions are unanimous in predicting that the global temperature is rising which would ultimately impact Pakistan more severely due to its geographical position

The Speaker also stressed the need for effective climate financing. He stated that the meteorological phenomena, including floods, heat waves, wildfires, droughts, and storms, must be shown to the world to present evidence of Pakistan's precarious situation to gain access to climate finance.

Recommendations and Way Forward

Sustainable Energy Mix

- Reduce greenhouse gas emissions with the use of sustainable energy sources and energy-efficient production measures

Resilient Farming

- Develop drought-resistant crops

Building Resilient Infrastructure

- Build resilient infrastructure such as flood protection systems, including small and medium-scale dams and barrages
- Implement Water management strategies
- Encourage urban and rural land use planning and management that is resilient to climate change

Early Warning Systems

- Develop early warning systems and emergency response plans for extreme weather events

Restoration of Natural Habitat

- Restore and protect natural habitats and ecosystems to increase carbon sequestration and biodiversity

Policies and Regulations

- Implement policies and regulations to promote sustainable development and reduce vulnerability to climate change

Capacity Building and Research

- Invest in climate change research to improve understanding and prediction of future changes
- Build capacity and knowledge in communities and sectors to adapt to climate change impacts

International Cooperation

- Encourage international cooperation to address the global impact of climate change

Adaptation and Mitigation with Relation to Climate Change

Dr. Abid Qaiyum Suleri

Dr. Abid Qaiyum Suleri is Executive Director at Sustainable Development Policy Institute (SDPI). At present, he serves in different policy-making forums and advisory boards, including National Advisory Council of the Planning Commission of Pakistan and the Pakistan Climate Change Council. He is Convenor of the National Coordination Committee on Prime Minister's Agriculture Transformation Plan and is a Member of the Board of Directors of the National Disaster Risk Management Fund. He is also a Member of the Government of Punjab's Vice Chancellors' Search Committee for Agricultural Universities.



He has represented Pakistan in various official delegations including the UN Sustainable Development Summit, the UNFCCC Conference of Parties (COPs) and WTO Ministerial Conferences. His current research interests include sustainable development, inclusive and sustainable economic growth, food security, regional trade, and the political economy of development. Dr Suleri earned his PhD in Food Security from the University of Greenwich.

Dr. Suleri discussed Pakistan's vulnerability to climate change in the background of the unprecedented increase in global temperature, with particular reference to the previous two and a half decades.

Global Warming and Pakistan's Susceptibility

The Speaker observed that Pakistan has been susceptible to changing climate and rising temperature, which is evident from recent catastrophic occurrences in the country. The year 2022 saw fierce floods and changed weather patterns. He showed satellite photos of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and informed that over 5 million people were affected by the flood and even today people are still at risk in those areas. There are 35 districts which have been classified as being affected with more exposure to difficult winter, and out of these, 14 are identified in Sindh, 10 in Baluchistan, 9 in Khyber Pakhtunkhwa and 2 in Punjab.

He also said that in 2022, Spring was non-existent and the weather shifted from winter to summer almost instantly. He also highlighted that in this year the hottest temperature recorded on earth was in April 2022 in Jacobabad, where the temperature soared to a scorching 49°C (120.2°F).

The Speaker expressed concern that Pakistan is most susceptible to the pressure of climate change, global warming, and erratic patterns of rainfall, droughts and glacier lake outbursts which imperils food security and energy. The impact of these pressures is resulting in harsh weather patterns, lost livelihoods, lost labour output, internal displacement, increased infectious period of diseases and an increase in the need for resources.

Tackling Climate Susceptibility with Robust Governance

The Speaker stated that in order to respond to climate change, Pakistan needs to implement a robust governance framework with institutional arrangements that can mitigate risks through adaptation, public-private partnerships, and better coordination between the federal and provincial governments (particularly in light of the 18th Amendment), community mobilisation and public awareness. In this regard, some sectors are important for integration in order to create co-benefits, and they are: the businesses, the private sector and research & development sector.

The Speaker emphasised the importance of having a right set of policies and regulations. He conceded that though natural calamities of high magnitude cannot be avoided, but with the right policies and practices, such calamities can be stopped from turning into disasters. He cited the floods of 2010 and the earthquake of

The year 2022 showed erratic weather patterns in Pakistan. There were recurrent experiences of heat waves, monsoon super rains and super flooding

2005 and stated that despite experiencing two major catastrophes in the last 17 years the right set of policies and practices could not be institutionalised for disaster prevention, rescue, relief and recovery. He drew attention to the fact that after the initial floods of 2010 in Pakistan, it had been decided that construction in the river catchment would be regularised through a River Act, but that has not been implemented till now. He said that the violation of land use zoning and torrent-hill flood channel catchment regions was evident in the case of certain hotels in Swat, which undertook construction in violation of land zoning rules and were wiped out in the floods of 2022. He further stated that to avoid high-magnitude disasters, it is important to activate the National Flood Protection Plan (NFPP). The dilemma is that the NFPP was made in 2015 after a rigorous preparation of two years but was approved and authorised by the Council of Common Interests after seven years. Then, its PC-1 was submitted to the Planning Commission for financing after further delays. He said that a new crisis in the shape of Covid-19 confronted the world and Pakistan; therefore, all the funds for the Public Sector Development Programme were shifted to combat Corona so the NFPP could not be implemented. He opined that had Pakistan implemented the NFPP at the right time without such inordinate delay, such a high-magnitude disaster of flood could have been avoided.

The Speaker expressed concern that Pakistan may not have learned vital lessons from previous disasters where

The violation of land use zoning and torrent-hill flood channel catchment regions was evident in the case of certain hotels in Swat which undertook construction in violation of land zoning rules and were wiped out in the floods of 2022

the lack of planning proved critical. He said that Pakistan is paying the price of emissions from use of fossil fuels from the advanced countries, but being one of the most vulnerable, there is a dire need for it to put into place a system of institutional framework and needed reforms to enable required adaptation and mitigation. In this regard, Pakistan needs to come up with a useful strategy based on learning from past disasters.

While elaborating on required actions on mitigation and adaptation that can help develop a useful climate-induced disaster response, he said that the first is to reduce and stabilise the levels of heat-trapping greenhouse gases in the atmosphere, which is mitigation. The second is to adapt to climate change. He further explained that mitigation strategies are put in place primarily at the national level in response to internationally agreed targets that can be set on a macro, national or worldwide scale. For instance, a reduction in fossil fuel consumption, shifting towards electronic vehicles and renewable energy generation such as solar power as well as reducing the use of coal are mitigation strategies. Such plans are made at the national or international level. They provide a regulatory framework for the federal government to carry out

implementation on standard mitigation techniques. Thereafter, adaptation strategies need to be concretised at the national and local levels with an assessment of risk for required benefits through the reduction of vulnerability.

There are two useful approaches that can help develop a useful climate induced disaster response. The first is to reduce and stabilize the levels of heat-trapping greenhouse gases in the atmosphere which is mitigation. The second is to adapt to climate change

The Speaker stated that Pakistan's share in the total global greenhouse gas emissions is less than 1%. He stated that considering Pakistan's own GHG emission mix, 60% is produced from the energy sector, followed by agriculture, industrial processes, land usage, deforestation, and poor waste disposal techniques. He stated that to mitigate the impact of emissions, the government is introducing many initiatives to reduce the carbon footprint by integrating alternate energy resources through solar power as currently, wind and hydropower still have a long way to go in Pakistan. The share of solar and hydel power consumption is thus rising. The government is putting into force measures like banning of open burning of rice grain is completely prohibited in agriculture as it causes smog.


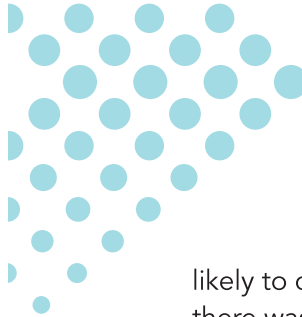
The Speaker stated that the government aims to promote the use of clean production technology by the implementation of environmental standards and by encouraging carbon trading between industries to reduce greenhouse gas production. In addition, the government is also attempting to use renewable energy for transportation and to implement an electric vehicle policy.

He said that Pakistan has made some commitments to its NDCs (Nationally Determined Contributions), which have been submitted to the United Nations Framework Convention on Climate Change (UNFCCC). These commitments are voluntary in nature but the submission of a periodic review report after every five years is important. In this way, Pakistan has committed that by 2030, 60% of all energy produced in the country will be generated from renewable energy resources, including hydropower. By the same timeline, 30% of all new vehicles will be electronic. Since 2020, new coal power plants have been subject to a moratorium and no power generation through imported coal would be allowed. There would also be a cap on the usage of coal. Thus, nature-based solutions are being promoted. The government has also pledged itself to a drive of reforestation whereby the initiative of a 10 billion tree tsunami aimed to essentially make land use better as well as increase the absorption of carbon dioxide which would, in turn, slow down global warming. Pakistan also has a draft national adaptation plan.

The Speaker went on to discuss the then draft National Adaptation Plan (NAP), which he termed similar to the NDC. He said in the NAP, eight vulnerable areas have been highlighted which are:

1. Water Resources
2. Agriculture and Livestock
3. Forestry
4. Human Health
5. Biodiversity and other living ecosystems
6. Disaster Preparedness
7. Urban Resilience
8. Gender

The Speaker said that Pakistan needs to have an adaptation plan in place as flooding and heat waves in 2022 have damaged agricultural yield to a great extent. Unpredictable water supply can continue, which is



likely to cause droughts or floods. He projected some grim reflections cast by the floods of 2022 in which there was a loss of 30% of wheat output and the country lost over 40% of its mango crop, particularly the late mangoes of South Punjab. In this regard, 45% of the nation's rice harvest could not be cultivated, while 40% fewer cotton bales were received than during the previous period.

These factors indicate that adaptation is required in Pakistan. For instance, in the agricultural sector, various kinds of crops should be harvested early in March instead of waiting until April. The Speaker spoke of the need to explore the production of climate-resilient seeds and crops under drought-like conditions and to survive in standing water. Similarly, in the case of forestry, alternatives to timber need to be explored in order to meet the need of fuel or construction. Such strategies are needed in forests to avoid deforestation. He also urged the need for expanding forests in order to promote biodiversity that would naturally rise when there is reduced soil or water erosion. Such measures are useful for the ecosystem to work naturally. He said that in the event of a calamity, a disaster preparedness plan should be in place to protect flood-prone areas.

There is a need to shift focus on gender centric policies in climate change management so that the protection of women from any kind of harassment and violence during crisis is ensured

The Speaker also spoke about spreading health awareness necessary for sensitising people about climate-related diseases and health hazards, emphasising that health supplies should be available during extreme weather conditions.

He stated that all disaster management organisations should develop coordination for sharing information and making plans such as the National Disaster Management Authority (NDMA), Disaster Risk Management (DRM) and other disaster management authorities.

The Speaker spoke about adaptation measures which include the mapping of hazard and agricultural zones to identify disaster-prone areas. In a similar vein, flood plans are also essential in strengthening early warning systems. He said that urban planning and solid waste management hold crucial importance as solid waste blocks water drainage and this causes flooding. He also shifted focus on gender-centric policies in climate change management so that the protection of women from any kind of harassment and violence during crisis is ensured.

The Speaker said that currently, Pakistan has committed to two adaptation strategies in its Nationally Determined Contribution (NDC)

- i. Recharge Pakistan: Recharge Pakistan is recharging of water catchment areas and is one of the two adaptation methods Pakistan has agreed to in its nationally determined contribution. It is a component of a larger restoration programme that must be re-built from the Himalayas to the Sea Indus River basin. The Indus River is the health of Pakistan as it is home to different fish species surrounded by trees or mangroves.
- ii. Protect Areas: The second component, i.e. protect areas, is a warning to preserve flora and fauna by forestation, national park designation and other measures. Moreover, designating glaciers as a national park ensures that there is a minimum amount of human activity around those glaciers.

The Co-benefits of Adaptation and Mitigation

The Speaker stated that governments should work on co-benefits of climate action for mitigation and adaptation. He stated that sometimes co-benefits can have a positive impact on one sector but a negative one on others. For instance, reducing emissions with high-energy efficiency through renewable resources would lead to a green infrastructure that would improve health & education and also raise the standard of living. Conversely, some policy actions could have a negative impact as the loss of revenue from lower energy bills would burden the economy. This implies that the government should formulate policies in tandem to enhance cooperation between departments as well as to maximise the co-benefits and bring them into a win-win situation.

He elaborated that carefully and properly coordinated climate action can create powerful synergies that result in multiple positive non-climate benefits such as improved biodiversity, job creation, reduced inequality and improved public health. He said that the value of co-benefits often equals or exceeds climate mitigation costs, however, this can vary geographically and by sector. Co-benefits also enable policymakers to frame the need for urgent climate action in the context of public and political priorities.

Climate Financing and Constraints

The Speaker then spoke about climate financing as an important response to mitigate and adapt to climate change challenges. He said that Pakistan is voicing climate concerns in international forums to gain access to climate funding. However, despite efforts, the country has not been able to secure the requisite funding, as evident from the fact that at the Geneva Climate Conference, Pakistan was able to receive only \$262 million or 32% of the commitments made in response to the UN's flash appeal that was \$816 million.

About 2 million children have not been able to attend school and over half a million would not be able to return to school again due to the limited capacity of re-building schools that were damaged in the 2022 floods

The Speaker presented critical reflections on the cost of inaction due to inadequate funding. He said that about 2 million children have not been able to attend school and over half a million would not be able to return to school again due to the limited capacity of re-building schools that were damaged in the floods. He said that surprisingly, mortalities have been observed to be lesser than from the Earthquake of 2010 as till December 15, 2022, but was predicted to rise sharply if health facilities were not provided in affected areas. The irony is that due to inadequate funding, government and agencies could not reach areas with the required assistance for relief, which is a contributor of worsening problems during a crisis.

Recommendations and Way Forward

Climate Resilience through Coordination of All

- Focus on climate resilience through collective action involving national legislation and local implementation plans using a bottom-up approach
- Realise the co-benefits of climate mitigation and adaptation strategies with institutional coordination and integration of the national, local agencies and private sector
- Strengthen private sector integration in the planning process

Greening of the Industrial Process

- Incorporate economic incentives to promote emission reduction by upgrading industrial processes and technologies
- Prepare voluntary "Corporate Social Responsibility (CSR)" guidelines and encourage the corporate sector to create a CSR fund to cover carbon emission reduction efforts in the industrial sector
- Promote the integration of the "Clean Production" strategy in the industrial sector by making more efficient use of inputs such as energy, water, and raw material

Agricultural Interventions

- Promote climate-smart inputs and management practices in agriculture
- Develop sustainable soil fertility improvement practices. Adopt mechanical and biological control methods to keep pest populations under control and to protect soil fertility and nutrient value of agricultural produce

Promote Energy Efficiency

- Strive to conserve energy and improve energy efficiency in all energy-using devices and processes
- Examine the gradual introduction of "Green Fiscal Reforms" in different sectors of the economy, including energy, water, and waste/sewage, to achieve the objectives of carbon emission reductions
- Promote energy efficiency and management activities that include new and innovative energy efficiency methodologies and techniques in various sectors, especially power generation, transportation, industry, biomass, and waste

Water Management

- Improve irrigation and water management
- Construction of large and small reservoirs, rain harvesting and storage, groundwater recharge, management, etc. to improve inter-seasonal water availability
- Introduction of water conservation technology and techniques in irrigation

Climate Diplomacy: The Fault Lines in the International Climate Politics

Mr. Jourdain Vaillant

Mr. Jourdain Vaillant is an expert at the French National Institute of Public Service (INSP), a diplomat, and a teacher at Sciences Po Paris (Introduction to Climate Diplomacy). Climate negotiator for France at the United Nations (COP), G7, and G20. Previously research fellow at the French Institute for High National Defense Studies (IHEDN), member of the cabinet office of the President of the French Constitutional Council. Drafter of the European "Climate and Finance Pact" (2019) and "Global Pact for the Environment" (2017) projects. Associate expert on ecological transitions at the French think tank "Fondation Jean Jaurès", and member of "Le Lierre", network of civil servants in charge of greening the French administration.



Mitigation Efforts and Challenges

Mr. Jourdain Vaillant explained that scientific studies have linked the rise in temperature to human action. He said that GHG emissions are very high and contribute towards an increase in global warming. He said that nearly 4 billion people are living in hotspots of high vulnerability to climate change in the world, which shows the severity of the risk to human life.

The Speaker stated that the way to combat climate change is to implement international climate change agreements. He said if the rise in temperature goes beyond 1.5 °C, the effects of climate change will no longer be reversible on the basis of adaptation measures alone.

Nearly 4 billion people are living in hotspots of high vulnerability to climate change

The world has already reached around 1.2°C; therefore, at the moment, the world is not on the right trajectory of limiting global warming to 1.5 °C.

Mr. Vaillant showed appreciation of Pakistani diplomats for their work related to various aspects of climate change. While talking about the Paris Agreement, he underscored the three fundamental tenets of the Agreement: mitigation, adaptation, and finance.

Speaking on mitigation, he brought attention to the contentious debate amongst countries which revolves around where emissions are generated. He said that emissions, whether generated in one territory can be ascribed to others as a non-generating country may be effected more than the country which is emitting GHG. Secondly, due to industrial and trade outsourcing, it is difficult to ascribe the sources accurately, which poses a considerable challenge to effective emission mitigation.

He further stated that to meet the targets of limiting global warming to 1.5 °C or even 2 °C, achieving net-zero emissions at a global scale is necessary. To accomplish this net-zero goal, societies need to embrace novel modes of production and consumption.

Adaptation Complexities

Talking about adaptation, Mr. Vaillant said that it is a complex phenomenon to comprehend because of the differences in the impact of climate change across various regions of the globe. This is in part due to substantial variations in the vulnerability of ecosystems and populations to climate change. The primary reasons for this vulnerability include patterns of socio-economic development, unsustainable land and ocean use, inequality and marginalisation, legacies of colonialism, and governance structures etc.

Mr. Vaillant further stated that despite effective measures, it is not possible to completely avoid loss and damage, particularly if temperatures rise beyond 1.5 °C. In such scenarios, some natural solutions may prove ineffective. The predicament is worse for inhabitants of small island states and the populations of regions reliant on melting of glaciers, as they may find it impossible to adapt if temperatures increase by 2°C. Additionally, the cultivation of various staple crops may become problematic in many agricultural regions.

If global average temperature rises above 1.5 °C from the current level some natural solutions may no longer work

Funding Hurdles

The Speaker highlighted finance as a significant hurdle in adaptation policy and implementation. Citing a 2022 United Nations report, he revealed that developing countries receive only a fraction of the international adaptation finance they require. In addition to this is the lack of proper adaptation planning, which further exacerbates the issue. In his assessment, certain countries have fallen short in delivering effective financial plans that can better assist in climate change adaptation.

Drawing from the Intergovernmental Panel on Climate Change (IPCC), he emphasised that finance, innovation, and behavioural change are the pivotal enablers for both mitigation and adaptation. These factors can potentially reduce obstacles and enhance the overall feasibility of maintaining global warming within the 1.5°C limit.

The third aspect of the Paris Agreement is finance. All mitigation and adaptation measures require heavy financial commitments which is perceived as a barrier in meeting with immediate progress. It is well known that developing countries do not have requisite finances therefore, the international community, in view of it being a global problem, has made efforts to assist in plugging the financial gap. This includes the provision of funds from local, national, and international sources, public and private.

The Speaker went on to state that through the Copenhagen Accord of 2009, it was agreed to provide \$100 billion each year for climate change by 2020. However, only about \$83 billion has been collected, falling short of the goal. He highlighted that potential donors require more financial commitments, including multilateral development banks (MDBs) and international financial institutions that must align their portfolios with the Paris Agreement's targets.

He pointed out that over 90% of total climate finance is earmarked for mitigation. According to COP26 agreements, it is envisaged to double adaptation climate finance by 2025 from its 2019 levels.

90% of total climate finance is used for mitigation and just 10% for adaptation

Developed countries and climate finance providers, including private entities, are prioritising adaptation. He said that unequal distribution of finance across regions hampers effective climate disaster response and prevention efforts.

The Speaker went on to state that the next summit of June 2023 in Paris aims to offer new policy suggestions and a range of solutions regarding global financial needs that concern climate change and development. He emphasised that the ability to be able to access climate finance differs widely as a number of factors play into it, such as a nations' pledges and commitments, the capacity of local institutions, cities, households, and individual capacities to secure financing.

IPCC Warnings and Policy Impact

The Speaker stated that unless adequate steps are taken, global warming may be between 2.5°C and 3.5°C by the century's end. However, he concluded by saying that policy decisions and international agreements can indeed make a difference and should be implemented on a war footing.

Recommendations and Way Forward

Reduce Mitigation-Adaptation Funding Gap

- The discrepancy in financial allocation at the international level between climate mitigation, finance and adaptation funding needs to be reduced
- Climate adaptation requires serious pledges from potential donors

Focus On Domestic Policy Implementation

- We only set targets, incentives, road maps, and policy frameworks at the international level but what matters is the ability of countries to take action at the national and sub-national levels

Multi-Level Climate Governance

- Policy implementation and actions at all levels of governance are necessary for successfully addressing the climate change challenges

Mr. Farrukh Khan

Mr. Farukh Khan is a civil servant, diplomat, and economist with 20 years of international experience in sustainable development and climate change. He is a Board Member of the Integrity Council for the Voluntary Carbon Market. He also worked as a Senior Manager and Head of Climate Finance at the United Nations. He has served as a Board Member and Counselor with different Climate Advisory Groups



The Severity of the Climate Crisis

Mr. Farrukh Khan started off explaining the severity of climate changes in Pakistan and quoted that international organisations and influential people had taken notice of the seriousness of the issue including the IPCC, the UN Secretary-General António Guterres, the European Commission President Ursula von der Leyen, President of Kenya William Ruto. He noted that there was a consensus that the damage exceeded ongoing recovery efforts and opined that the steps taken for controlling the climate change damage have been rather inadequate.

Secretary General António Guterres has said that we are on a highway to climate hell with our foot still on the accelerator

COP27 Negotiations

The Speaker was critical of the annual Conferences of the Parties (COP), as in his opinion, they have become more of a media event with very large gatherings but not enough output to show in the end. As an example, he quoted the recently held COP27 meeting. He said that expectations were high on issues such as increasing emission reduction targets in Nationally Determined Contributions (NDCs), advancing carbon market mechanisms, expanding climate finance, and elevating adaptation goals. However, not much progress was made on these agendas. However, an important landmark was achieved, which was the establishment of a Loss and Damage Fund to help developing countries address the impact of climate change. He was, however, cautious and expressed disappointment over the emphasis on paperwork formalities rather than concrete action, which then tends to slow down real progress on issues.

Fault Lines & Issues hindering Climate Action

The Speaker said that the World Economic Forum classified climate change amongst the top five threats of the past half-decade, yet steps needed to combat it have so far been insufficient. In this regard, he underscored certain fault lines that impede progress.

He stated that the absence of accountability at the international level was a serious concern as states were not held accountable for not meeting their commitments through any regulatory framework. He also spoke of divisions within nations on the nature of climate change policies. This, he opined has serious consequences that impact the level of commitment and role needed to be played by nations as no-one seems to be on the same page although we are now all 'battling for our existence'. Thirdly, there is a dire' cooperation deficiency'. With the Ukraine War and other political distractions, resource allocations for climate governance are not a priority therefore, progress is slow and not appreciable.

Discussing the fourth issue, the Speaker regretted that the threshold of 1.2°C has already been breached

and it seems improbable that the target of capping the temperature increase below 1.2°C. Given the current trajectory of NDCs, and low financial commitments, and countries' debt burdens, there appears to be no impending change. Regarding the fifth issue, he clarified that the window for adaptation is closing due to the trajectory of the rise in temperature and given the insufficient progress in emission reduction.

Given the fact that the threshold of 1.2°C has already been breached, it seems difficult to meet the target of capping the temperature increase below 1.5°C

The Speaker also highlighted the undue emphasis on procedures and processes of negotiations, stating that such red tape prevented timely action which when coupled with the slow initiatives of the wealthier nations was resulted in a rather unremarkable response to global climate change. He noted that climate change cannot be tackled separately from other crises like food and energy shortages, as these collectively pose an existential threat to human existence.

Reforms in Climate Finance

Expressing concern over global inequality as wealth continues to be unevenly concentrated, the Speaker stated that climate finance necessitates substantial reforms and equity is key. In his view, the current financial architecture lacks the capacity to alleviate the costs of climate change therefore, he stressed the urgency of equitable and responsive reforms so that the global community can reorient itself towards the trillion-dollar cost of transition that requires the adoption of mitigation and adaptation strategies especially for those countries which are most vulnerable to the hazards of climate change.

Recommendations and Way Forward

Tangible Outcomes

- There should be tangible outcomes instead of tedious negotiations and paperwork

Enhance Funding for Addressing Climate Change

- Funding for climate change needs to be significantly increased through a different financial architecture to manage the massive needs of mitigation and adaptation in an equitable and responsive manner

Creating Greater Ownership Amongst and Within States

- Negotiating an equitable response to address challenges faced by Pakistan to manage climate change by the international community and stakeholders
- Creating an accountability framework to ensure commitments made and pledged are delivered are provided in time

Climatic Governance and Institutional Frameworks in a Federation: Structure and Policy

(International and National Regulatory Framework)

Mr. Ahmad Nazir Warraich

Mr. Ahmad Nazir Warraich brings together a unique combination of experience of public sector, civil society, academia and the private sector. He is a former civil servant who after resignation has been continuously working in the legal field: as a practicing lawyer, a law teacher and a legal consultant and researcher amongst other things. He brings substantial practical and academic knowledge and experience to his current position as Dean EDI, NSPP. He is a recipient of two prestigious scholarships; Britannia Chevening Scholarship Award as well as the Hubert Humphrey Fellowship (Fulbright) Award. He has been educated in Pakistan, England, USA as well as doing short courses from France, IMF-WB Headquarters, Washington, D.C, and University of California Los Angeles. His career also includes heading various legal departments. In addition, he has many publications to his credit.




Mr. Warraich highlighted the importance of taking effective and immediate actions with regard to mitigating and adaptation measures required with regard to climate change. He pointed out that any effective intervention requires a functional and efficient regulatory framework to be in place. He mentioned that as climate change does not respect borders: either national or subnational therefore, the regulatory framework has to be functional at both the international as well as national levels. In a federation like Pakistan, the framework also has to be in place in the federating units, going all the way down to the local governance structure.

Link between International & National Policies

While explaining the difference between national and international regulatory frameworks of climate change, he informed the audience that the international regulatory framework is based on consensus decisions, whereas international law/relations has its own intricacies and complications, as the primary instinct of states looks after their own interests. On the other hand, at the national level, decision-making only requires a majority. However, the regulatory framework and compliance mechanisms are a little more complicated and nuanced in an evolving democracy which is based on the division of power between the centre and the federating units.

Entry 32 of the federal legislative list, gives the responsibility of honouring international treaties to the Federal government

He said that international negotiations have a correlation with national and subnational politics as well. He said that, in his well-known quote, Lord Palmerston said, "We have no eternal allies, and we have no perpetual enemies. Our interests are eternal and perpetual, and those interests it is our duty to follow". He highlighted that this connection between international agreements and national politics has perhaps not been fully explored by experts, whereas in Mr. Warraich's opinion, this is an important component to be



kept in mind while negotiating international treaty. In this context, he referred to the USA as an example of a country that is considered by many climate change advocates to be not contributing to the extent required by a country of its stature. This lack of support and funding towards climate change mitigation and adaptation is considered to be based on resistance from the Congress.

Mr. Warraich highlighted the importance of taking action with regard to climate change mitigation and adaptation by Pakistan, considering our particular vulnerability to climate-induced disasters. He said to fully operationalise our international and national level commitments regarding climate change; we need to fully understand the national and provincial regulatory framework in Pakistan. He mentioned that after the 18th Amendment, many subjects given in the Legislative List were devolved to the provinces; therefore for effective climate change measures it is important for all stakeholders to understand the relevant government and institutional (including quasi-judicial) machinery in place. He explained that at the federal level, Ministry of Climate Change is responsible for national policy, plans, strategies and programmes with regard to disaster management, including environmental protection, preservation, pollution, ecology, forestry, wildlife, biodiversity, climate change and desertification. At the provincial level, every province is responsible in its own territory to implement climate change policy through provincial environment protection agencies. It needs to be highlighted that provinces do not have counterpart climate change departments.

Role of Local Governments

Referring to entry 32 of the federal legislative list, he said that honouring International Treaties is the federal government's responsibility. Still, its implementation is the collective effort of all federating units. He said that the climate ministry is making the policies and plans, but the implementation in many cases is at the provincial level. This requires increased cooperation and coordination between the centre and the provinces. In addition, there has to be a whole of government approach, meaning at the federal and provincial level there has to be inter-ministerial and departmental coordination.

He highlighted that many of the subjects that are involved in climate change have been devolved to the provinces under the 18th Amendment such as health, education, industry, agriculture, irrigation etc. With this division of the subjects which is typical of a Federation, policy formulation and governance is done at two levels. This requires careful and continuous interaction and calibration between the two levels of governance. In addition, given that local government is an important third tier and component of a democracy, it too has to be involved in the process with regard to need assessment and implementation. He highlighted that an important tier is missing in the implementation loop: the local government. Local governments can play an important role in climate adaptation in the provinces. He said that local governments do not have enough powers and funds to combat climate crises.

He highlighted the importance of a well coordinated approach between the Centre and the Federating units for tackling climate related issues

We need to figure out how much of the provincial level is aligned with federal guidelines and procedures. In his opinion, policy should be indigenised according to a province's requirements instead of copying/pasting because every province has its own needs and topography. He opined that stakeholder consultation is very important at all levels, within and with other provinces.

Climate Change vs Environment

Here, he mentioned that many people in Pakistan do not fully appreciate the difference between climate change and environment. Climate change refers to long-term shifts in weather patterns and average temperatures caused by human activities, primarily the release of greenhouse gases into the atmosphere, whereas environment primarily includes air, water, land, etc. He stressed that it is important to understand this difference to gauge the effectiveness of the enforcement mechanisms in place.

He highlighted that while climate change has to be dealt with in a holistic manner but, due to various interests of countries, mitigation is more of a worldwide level concern while adaptation is left more to each country. He said this is perhaps because climate change can occur in one country but affects another country; therefore, it is of greater concern to the developed world. On the other hand, developing countries

He emphasised the need for international collaboration with greater funding for adaptation

like Pakistan, which do not contribute much to greenhouse gas emissions, are more concerned with adaptation. This is another important factor that must be considered while developing and implementing climate change-related policies and interventions.

Role of Environmental Tribunals

While speaking about quasi-judicial forums, he said that there are environmental tribunals in place both at the federal and provincial levels. It is considered by many experts they have enough power to make decisions regarding environmental cases, and their influential role can play an important role in dealing with environmental issues. However it has to be kept in mind that they only cover environmental pollution and degradation under the relevant acts and do not deal with the broader issues that come in the ambit of climate change. He also mentioned the need to review the Climate Change Act, whether it differs among provinces or is the same so that individual provincial needs can be fulfilled as well as the quasi-judicial adjudicatory frameworks in place under the Environmental Protection Act(s).

He also discussed, in brief, some of the seminal judgements of the Honourable Superior Courts, such as the famous Shela Zia Case, and their contribution towards improving environmental cleanliness and protection. However, again he emphasised that climate change is a broader and distinct area than environment per se.

Recommendations and Way Forward

Improve Inter & Intra Departmental Coordination

- He emphasised smooth working relationship between ministries and also between the centre and provinces

Strengthen Local Government

- Local government should be empowered to implement climate change policy
- Effective and meaningful consultation is necessary at all levels of governments

Make Climate Change Policy Functional

- Pakistan should setup the bodies mentioned in Climate Change Act and make functional
- Highlight the difference between climate change and environment for the understanding of the common man

Mr. Ahmad Rafay Alam

Ahmad Rafay Alam is an environmental lawyer and activist with considerable experience in corporate and constitutional law. He co-founded a law firm specializing in energy, water, natural resources, and urban infrastructure sectors. He advises government bodies, international organizations, and corporate clients on policy and strategy in these areas, as well as on sustainability issues. He has knowledge of government functions in Pakistan. He also serves on various councils and advisory boards related to climate change, environment protection, water management, and air quality.



Mr. Rafay Alam highlighted that the year 2022 was very impactful in terms of climate change for Pakistan: air pollution was at its highest level and unprecedented heat waves and monsoon storms displaced over 30 million Pakistanis. He also said that not only heat waves, forest fires and floods but also the plague of locusts that hit Pakistan in 2020 were due to climate change that created massive breeding grounds for locusts. Quoting an environmental scientist, he said 70% of the intensity of the rainfall came due to a 1°C increase in global warming. Climate change affected not only Pakistan but also Nigeria, Philippines, China and parts of Europe in terms of flood and heat waves.

Secretary General António Guterres has said that we are on a highway to climate hell with our foot still on the accelerator

He said that GHGs are the main cause of climate change. The GHGs disrupt weather systems and the ecosystem of the earth. Referring to Mano Lopo observatory lab in Hawaii, he said on average, 420 parts per million of carbon concentration is present in the atmosphere, which is the highest in human history, 'leading us towards 6th extinction period'.

Pakistan Internal Government Structure with regard to Climate Change and Environment

He highlighted Pakistan's efforts regarding climate change and said that Pakistan had launched its National Climate Change Policy in 2012. The 18th Amendment was passed in the same year and climate change became a provincial subject. The federation would now work and report on multilateral environment and climate change agreements while climate change governance would be done provincially.

He stated that the Pakistan Climate Change Act of 2017 envisages the formation of a Climate Change Council and Authority. The Council is staffed by the Prime Minister, the Chief Ministers, the Ministers of the Provinces, civil society, technocrats and people from academia and business. They formulate national climate policy and action plans which have to be implemented by the climate authority. The Director General heads the climate authority. It has four members who have representation from each province. He said although the Act was passed in 2017, and the law requires the climate council to meet at least twice a year, it met only once in September 2022 before the COP27. Moreover, the Climate Change Authority has not been notified yet. He claimed "many times resistance is seen among provinces on climate policy implementation".

Pakistan's Nationally Determined Contribution

He informed the audience that Pakistan had filed its first NDCs in 2016, revised in 2021. According to NDCs, the nature of the adaptation plan is provincial. He said, "Still, the federal government has to seek

international climate finance and has no sub-national governance or budgeting strategies". Also, he stated that there was no formal mechanism for coordinating international agreements like climate change when a subject matter is in the provincial domain. In his opinion, the Environmental Protection Acts do not regulate

The role of women must be made centre stage in climate adaptation and mitigation measures

all environmental-related issues. Their field formations are limited to urban areas only and most of the work of the non-urban regions is delegated to the Disaster Management Authority on issues like use of pesticides on crops.

He also opined that capitalism, patriarchy, consumerism, and colonialism as the main drivers of climate change. He also said that women should be given the opportunity to make decisions for climate change as they can perform well on climate change matters.

Recommendations and Way Forward

Strengthen Local Government

- Local governments can play an effective role in climate change mitigation

Gendered Policies in Climate Change

- Women should be made an important concern of the climate change policy and their vulnerabilities must be identified and addressed

Expand Scope Of EPAs

- Environmental protection agencies should play a more active role in addressing climate change issues
- EPA field formations are limited to urban areas. They need to be expanded to non-urban regions as well.

Global Climate Finance Landscape: Politics, Challenges and Opportunities

Mr. Nauman Bashir Bhatti

Mr. Nauman Bashir Bhatti recently served as Director General Strategic Planning in the Foreign Secretary's Office. He has over 18 years of diplomatic experience and has served as Desk Officer for the U.S. and the UN & as Director for the UN and Foreign Secretary Office. He has also served at Pakistan Missions abroad as First Secretary in Berlin, Counsellor in the Permanent Mission of Pakistan to the UN in New York, and Deputy Head of Mission in Brussels. He specializes in multilateral negotiations and sustainable development issues, particularly Energy and Climate Finance.

Based on his expertise he negotiated several international instruments and multilateral agreements on behalf of Pakistan, including Paris Agreement on Climate Change. He is currently Pakistan's Ambassador in Astana, Kazakstan, and Co-Chair of the Green Climate Fund.



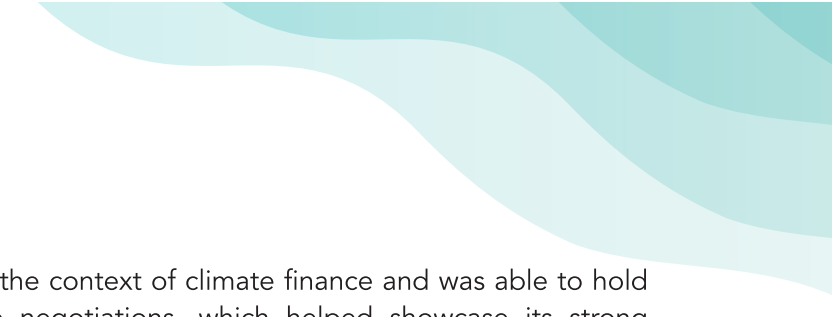

Mr. Nauman Bhatti informed the audience that people see climate change from the prism of the environment only, although climate change is a political, national security and socio-economic phenomenon with cross-sectoral implications that impact inter-state relationships in multiple ways. The Speaker stated that climate negotiations were one of the most complex forms of negotiations because of their far-reaching implications on economic growth and development.

Pakistan's Internal and External Climate Dynamics

The Speaker classified climate dynamics of Pakistan in two categories: internal and external. Regarding internal dynamics, he said that Pakistan was highly vulnerable to the impact of climate change despite contributing less than one percent to global greenhouse gas emissions. This has placed additional stress on its limited resources fiscal space and added a climate dimension to its challenges of water, food & energy security as well as debt management and development issues.

The Speaker referred to climate change as a major concern and stated that it had to be given national priority. He stated that our NDC targets were highly ambitious as their achievement was expensive and conditional upon the receipt of external finance. As an example, he highlighted that in order to transition towards green energy, Pakistan requires an approximate amount of \$100 billion, which is not at its disposal. In order to make headway, he called for effective diplomatic deliberations, highlighting that Pakistan is not responsible for the high level of global GHG emissions or its resultant negative impacts but is paying a heavy price due to inclement climactic changes. He informed the audience that under the Paris Agreement, every country is required to demonstrate results through respective NDCs, followed by regular reporting. He stated that it is important for Pakistan not to obligate itself to undertake ambitious emission-reduction actions unless assisted with the required international financial support. He underscored that Pakistan needed to benefit from the global attention on climate-related projects while pursuing its nationally determined economic and development goals.

Regarding external dynamics, the Speaker explained that Pakistan was recognised as a significant player in



the UN climate change negotiations, particularly in the context of climate finance and was able to hold membership of several important climate change negotiations, which helped showcase its strong leadership credentials. In this context, Pakistan was able to chair climate negotiations of G-77 and China in 2022 and led the way for developing countries in securing an agreement towards creating a Loss & Damage Fund in the Sharm-el-Sheikh climate moot.

Barriers to Climate Change Compliance

The Speaker went on to explain that developing countries like Pakistan face overarching challenges in tailoring their response to climate change. To start with, climate change is mostly considered as an environmental threat. There is also limited potential to achieve immediate outcomes as medium to long-term strategies can be more workable in view of limited institutional capacity and constraints. Thirdly, there are gaps in policy and its implementation is made more complex by the weak coordination amongst ministries and the provinces. Another barrier is the absence of credible data for making accurate projections and developing informed strategies. The overreliance on external consultants negatively impacts the indigenous growth of institutional capacities. The Speaker further highlighted that new and emerging opportunities were not being tapped due to lack of finance. He said that as per the UN Climate Convention and Paris Agreement, climate actions by developing countries are to be supported by international finance but there is at yet no internationally agreed definition of climate finance, making it difficult to record and track the actual financial flows to developing countries. It is not uncommon to observe most of the development finance being repurposed as climate finance which then creates double accounting, which can be contentious. .

Finance and Politics

The Speaker stated that climate-smart economic growth has its cost. Some projects though necessary are seen as financially unviable due to various additional costs and arrangements. In order to materialise such projects, developing countries like Pakistan have to rely on external debts and assistance, which adds to their existing debt stress. He said that as climate negotiations are mostly led by foreign ministries of different countries, there is a tendency for the climate agenda to be mainly driven by the developed world to safeguard their own economic interests and shift the burden of climate action to emerging economies and developing countries. In this context, he quoted the example of the European 'green deal', which ostensibly aimed to create certain climate conditionalities and trade restrictions on EU countries while promoting FDI outflows from the EU towards developing countries.

The Speaker stated that international lenders and investors tend to prefer major economies where they find large revenue returns from infrastructure, energy and transport sector projects. They also invest in least-developed countries in relief efforts from catastrophes on short-term basis. However, he opined that developing countries are at a relative disadvantage as they require much more interventions with lesser profits; therefore, they are made to undergo stringent tests to merit consideration for funding. He recollected that when Pakistan sought GSP-plus status, it was required to undertake a range of strict compliance actions. The GSP Plus arrangement beyond 2024 also emphasises climate action, which places middle-income countries like Pakistan under undue stress for its compliance.

The Speaker then called attention to the 'Loss & Damage Fund' and its modalities. Climate-induced loss & damage he said is broadly considered part of adaptation and that the loss and fund established in 2022 has yet to be operationalised as its scope, scale and protocols are in the development process. Hence, Pakistan

continues to rely on international humanitarian support mechanisms like OCHA, CERF, or bilateral channels for its flood reconstruction and rehabilitation efforts in the aftermath of the 2022 floods.

Climate Change Opportunities

In the end, the Speaker spoke of the window of opportunities that climate change could usher for Pakistan. He stated that Pakistan's economic growth potential could be leveraged to attract foreign investment in various climate-centred sectors, of which the green energy sector is significant. He then stated that various financial institutions have allocated funds for dedicated climate action and the international private sector is also

Pakistan's tremendous economic growth potential could be leveraged for bringing in significant foreign investment in various sectors

reorienting its financing approach by mainstreaming climate considerations. These resources can be harnessed by astute national strategies and diplomatic acumen. He also emphasised Pakistan's participation in the international carbon market which was growing at a rapid pace.

Recommendations and Way Forward

Mainstream Climate Change Policy

- Adopt a systematic, consistent & coordinated national approach to climate change with integration of a robust governance structure

Improve Empirical Data for Informed Decision-making

- Undertake critical assessments for informed decision-making using data and improving research on climate change

Attract Climate Financing on high priority sectors

- Identify priority sectors for attracting climate finance
- Initiate structured engagements with key countries for bilateral partnerships.
- Create absorptive capacity, including understanding of access modalities of various financing windows, for enhanced inflows of climate finance

Disaster Management: Pakistan's Preparedness for Future Climate Disasters in view of Lessons Learnt from Current Floods

Mr. Muhammad Idrees Mahsud

Mr. Muhammad Idrees Mahsud is a member of the Civil Service of Pakistan. He is currently serving as Member NDMA Pakistan since 2017 as Head of the Disaster Risk Reduction Wing (DRR). He has also served at key positions in NDMA with responsibilities of both pre-disaster development and DRR assignments as well as disaster response roles. He holds a Masters of Public Policy and Management from University of Melbourne, Australia.



Mr. Idrees Mahsud said that Pakistan has faced and could possibly continue to face cataclysmic consequences of the changing global climate. He said Pakistan is facing extreme weather events, which are evident from the faster-than-normal recession of the Hindu Kush-Karakoram-Himalayan glaciers, unusual rains, torrents, floods as well as heightened heat and water-stressed conditions. In this regard, he stressed the need for the formulation of proactive policies to grapple with these challenges. In this background, he discussed the floods of 2022 and the consequent devastation that occurred as Pakistan struggled to deal with the dire consequences.

Extreme Climate Challenges

The Speaker stated that since the 1950s, the mean temperature has been rising in Pakistan with such an adverse impact that we are draining our resources at an alarming rate. Much more serious is the human cost involved, whereby countless people have lost their lives due to climate-induced disasters on account of extreme temperatures and sudden floods.

The Speaker informed that the monsoon of 2022 was one of the most extreme in the history of Pakistan, which resulted in heavy floods and colossal damage. He stated that though it was in the knowledge of climate departments and experts that the monsoon would deviate from normal but the projection was approximate and did not foretell the exact scale of devastation that unfolded subsequently and left everyone in shock. He said that areas of Pakistan, which normally received 60 mm rainfall annually experienced rainfall of upto 1752 mm. Although Pakistan had earlier experienced severe floods in the year 2010 but the 2022 floods surpassed all extremes recorded thus far and were three times as severe as 2010, affecting an area as vast as Portugal. He stated that despite contingency planning and mock exercises, our response was unable to manage the violent floods due to the fact that the deviation proved to be over 190% overall in Pakistan. In the case of individual provinces, the deviation was so extreme that it was 436% in Baluchistan and 464% in Sindh.

Although Pakistan had earlier experienced severe floods in the year 2010 but the 2022 floods surpassed them. These were three times as severe as those of 2010, affecting an area as vast as Portugal

The Speaker highlighted that the cumulative loss of the 2022 floods was estimated to be \$32 billion, with

\$14.90 in monetary terms and \$15.2 billion in terms of damages. He estimated that damage to the agriculture, industry and service sectors was upto 4.8% of GDP, pushing around 8-9 million people further into the poverty net. He further informed that although Pakistan had been committed \$10 billion in aid from donor agencies, the same still remains to be realised till today.

NDMA and Disaster Responsiveness

The Speaker lauded the effort of NDMA in its response to the task of handling the most severe climate crisis faced by the country since its inception. He explained that knowledge of climate-related risks is an important discipline and requires research and interpretation of data. He mentioned that in this regard, the NDMA has developed a dedicated tool which is called 'multi-health vulnerability risk assessment' which had won worldwide appreciation. He informed that the tool has been rolled out in 13 districts of Pakistan while further interventions are being evolved from the experience of climatic changes being experienced in Pakistan. The Speaker also informed that NDMA has been able to raise nine urban search and rescue teams equipped with gadgets and canine components that can detect life in 18-meter depths of debris. Their capability is INSARAG certified and they are also given the task to train others.

While speaking of the governance structure, the Speaker stated that the National Disaster Management Authority is the federal entity that oversees climate policy and regulations at the federal level. However, till date, disaster management is not a devolved subject despite passing of the 18th Amendment which makes it difficult to evolve an efficient climate crisis response at the grassroots level. Nonetheless, NDMA is a responsive federal institution with dynamic policies at the national and provincial levels, albeit it still lacks resources at the district level and, therefore, needs to be augmented by local-level disaster response units. Moreover, in view of the challenges being confronted by the changing climate, the need for maintaining state-of-the-art, reliable and efficient mechanisms such as early warning systems and weather forecasting radars augmented by periodic disaster management training for human resources cannot be more emphasised.

Innovating Funding Interventions

The Speaker stated that though we cannot eliminate risk, we can improve our policies and incentivise the capacities of stakeholders. In order to respond to emergencies, it is imperative to have resources and funds at hand. Policies are therefore needed to refocus incentives for such schemes that can provide funds exclusively for the hazards and damages incurred from the impact of climate change. One prospective

Currently, the insurance penetration is only 0.7% in Pakistan: we do not have a culture of insuring houses and buildings due to which risk is not transferred to the third party. He emphasized the need for creating macro level risk financing mechanisms

sector that merits attention is insurance. The Speaker added that it is rather underwhelming to learn that the penetration of insurance in Pakistan is only 0.7% as there is no culture of insuring assets. Due to this, there is a high cost of any untoward damage to an asset as the risk is not transferred to the third party, unlike the practise in other countries. He suggested that this needs to be addressed by incentivising the insurance sector to cater to risks associated with climate change.

The Speaker also emphasised the need for creating macro-level risk financing where risk can be transferred at the district, province and national level through specially targeted fiscal interventions. Additionally, he opined that poor people could be helped by setting up a common pool of funds for climate rehabilitation & re-building by encouraging public-private sector partnerships. The Speaker also emphasised the need to shift from

disaster response to disaster risk reduction (DDR) because 'spending of every one dollar on disaster risk reduction saves seven dollars on disaster response and four dollars in losses'. He continued that today the transition from conventional fossil fuels to renewable green energy sources is being emphasised globally, and this is what Pakistan should also be planning.

Pakistan's public policy needs to shift from disaster response to disaster risk reduction (DDR) because spending of every one dollar on disaster risk reduction saves seven dollars on disaster response and four dollars in losses

Recommendations and Way Forward

Devolution of Disaster Management Post 18th Amendment

- The NDMA serves as the premier federal disaster management authority, but provincial and local level departments need to confront their challenges using home-grown solutions and grassroots-level response, which is possible if more powers are devolved to them in letter and spirit as envisaged in the 18th Amendment

Strengthening of Civil Defence Departments

- Civil Defence should be made a part of the national disaster management system and must be strengthened with periodic capacity building and specialised trainings

Need for Multiple Emergency Response Units

- There is a need for multiple national emergency centres running on integrated national data under a unified command and control centre

Training on Climate Change Trends

- Capacity building of climate experts and field staff needs to be enhanced
- Increased research on climate change must be encouraged to assist with informed decision-making on climate change

Encourage Public-Private Partnerships for Community Financing

- Poor people may be helped through a common pool of funds sponsored by public-private partnerships

Incentivise the Insurance Sector

- Improve insurance penetration and incentivise insurance schemes in sync with climate change policy and response

Actions Required from the Policy Level Perspective

Mr. Syed Zafar Ali Shah

Mr. Syed Zafar Ali Shah has 28 years of experience in the public sector with a vast experience in policy formulation, strategic management & implementation, budget formulation, financial management, taxation measures, revenue mobilization, ease of doing business, planning & development, and administration. He is a recipient of a Britannia Chevening Scholarship and stood first in the Civil Services Exams (1992). He has completed his MBA from the Business Management School, University of Bath, UK and currently is serving as Secretary of Planning, Government of Pakistan.



Syed Zafar Ali Shah started his discourse by right away presenting stark statistics related to the challenge of climate change confronted by Pakistan. He stated that Pakistan has constantly been ranked amongst the top ten countries that are most vulnerable to climate change and that in the 2020 Global Climate Risk Index annual report Pakistan has lost 5.3% per unit in GDP due to damages in the last 20 years.

The Climate Change Impact on Pakistan's Economy


Out of 155 districts 90 were declared disaster-stricken. Speaking about the impact of the floods of 2022, Mr. Syed Zafar Ali Shah noted that out of 155 districts 90 were declared disaster-stricken, leading to an estimated \$30 billion in losses and damages. With the 2022 floods alone causing a decline of 4.8% in the GDP of FY22. Food prices escalated and poverty rates increased, especially in view of the fact that the main sectors of the economy; the agricultural, industrial and service sectors were severely impacted.

The Development of the 4RF Framework and Planning Process

The Speaker noted that such a severe weather event necessitates a paradigm shift in policy-making. He said that an event of this magnitude requires a national level coordination and response, and all stakeholders rose to the occasion. As a result, the rehabilitation and recovery response to the 2022 floods was notably prompt and robust. In order to assess the extent of damage and to tailor an effective response, data from satellite imagery as well as from the 2017 census and BISP was utilized. Parallel to this, a planning mechanism was developed in the form of a document known as 4RF Framework (Resilient, Recovery, Rehabilitation, and Reconstruction).

Out of 155 districts 90 were declared disaster-stricken

The Speaker explained that the 4RF document aims to promote inclusive and resilient recovery through a 'Whole of Pakistan' approach, thus paving the way for sustainable development. It envisages securing of international multilateral funding as well as engaging the local economy encompassing the private sector as well as public-private partnerships and inclusion of civil society. He stated that following a comprehensive assessment and validation of the losses, the Post-Disaster Needs Assessment (PDNA) process was initiated. It then transitioned into the 4RF response framework phase, concurrently engaging the international community. Mr. Shah also mentioned that the establishment of standing committees and



4RF units was underway for effective implementation. The formation of these units indicates a systematic and organized approach towards implementing the recovery and rehabilitation strategies laid out in the 4RF document.

He said that a minimum of \$16.3 billion, as estimated by the PDNA, was required for robust rebuilding. Mr. Shah acknowledged the tireless efforts of all partners involved in the process, under the leadership of the federal government and with the backing of the provincial governments. He however expressed his concerns about the potentially heightened impact of climate change in the future.

The 4RF Document incorporates 17 sectors divided into four main categories: social, infrastructure, production and other cross-cutting sectors requiring attention in climate change response

The 4RF Document, he explained, proved pivotal in presenting Pakistan's case at an international donor conference co-hosted by the UN on 9th January, 2023 which incorporated 17 sectors divided into four main categories: social, infrastructure, production and other cross-cutting sectors. The damage and losses were estimated to be a little over \$30 billion.

As result of these timely assessments and actions and successful diplomacy Pakistan was able to effectively informed our international partners about the seriousness of the issue. The UN Secretary-General also visited the flood-stricken areas and helped effectively convey the urgency of the situation to the world for soliciting global support and coordination. He added that internationally recognized best practices were implemented for post-disaster need assessments, involving a core group of 100 experts from international partners. Additionally, civil society organizations and climate change experts, as well as the provincial departments were incorporated into the consultation process.

Pakistan's Recovery Plan and need for 'Green Financing'

While delving into details of funding and finding sources for post climate induced disaster like the 2022 floods, the Speaker stated that half of the financing needs need to be met from internal resources with the remainder sourced externally. This balanced strategy would signify the importance of internal resilience as well as international cooperation in overcoming challenges posed by climate change.

The Speaker acknowledged the lack of green finance expertise and capacity in Pakistan and emphasized the need for accrediting institutions to access green financing. He stated that Pakistan had secured three green financing projects worth about \$150 million and stressed the need for further enhancing the capacity of financial institutions and executing authorities.

Recommendations and Way Forward

The Need to Better Tap International Green Financing Facilities

- Pakistan needs to enhance its capacity to win green finance projects

Make Climate Change Mainstream National Policy

- Integrate climate change considerations into mainstream policy-making to prepare for and mitigate extreme weather events

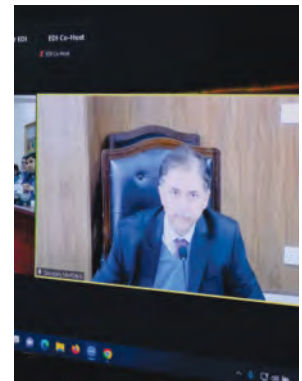
International Best Practises for Dealing with Climate Induced Disaster

- Implement internationally recognized best practices for post-disaster needs assessments, engaging international experts and partners

Develop a Robust 4RF Framework

- Develop comprehensive and resilient frameworks, like the 4RF, to guide the recovery and rehabilitation process after climate-related disasters.
- Prioritize the accreditation of local institutions to enhance Pakistan's capacity for accessing and managing green financing.
- Establish smaller, focused units, instead of relying on large entities, for more effective and prompt implementation of recovery and rehabilitation strategies

Pictures Gallery

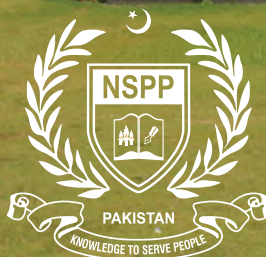




Policy Dialogue Workshop
**“Impact of Climate Change: Pakistan’s Experience with
 Climate Induced Disasters”**
 25th to 26th January, 2023



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