

Climate Finance For Pakistan: what and how.?

Dr Aneel Salman

Maryam Ayub

April 2024

Climate Finance Potential for Pakistan

Executive Summary

Existing international climate finance is insufficient to meet Pakistan's mitigation and adaptation needs defined in its Nationally Determined Contributions (NDC). To bridge this gap, Pakistan requires innovative financing solutions, such as concessional finance instruments like green bonds, debt-for-climate swaps, nature performance bonds, and carbon pricing instruments. Utilising these instruments can mobilise green finance to achieve NDC targets. Collaboration with the private sector, particularly in the banking and industrial sectors, is essential to increase financial flow for climate initiatives. Moreover, vulnerable populations, especially women and children, require support through green finance for food and water security. Implementation strategies should focus on political stability, local governance reforms, public-private partnerships, and enhancing international cooperation to attract climate finance.

DEFINITIONS

Climate Finance: Financial resources and instruments that are used to support action on climate change.

Climate Security: Evaluating, managing and reducing the risk to peace and stability brought on by the climate crisis.

Mitigation: Climate Change mitigation refers to any action taken by governments, businesses, or people to reduce or prevent greenhouse gas emissions, or to enhance carbon sinks that remove these gases from the atmosphere.

Adaptation: Climate change adaptation refers to actions that help reduce vulnerability to the current or expected impacts of climate change like weather extremes and natural disasters, sea-level rise, biodiversity loss or food and water insecurity.

Resilience: Climate resilience is the capacity of a community or environment to anticipate and manage climate impacts, minimize their damage, and recover and transform as needed after the initial shock.

COP: The annual United Nations conference dedicated to climate change, called the “Conference of Parties” or “COP” has been organised under the UN Framework Convention on Climate Change (UNFCCC) since 1995.

Green House Gases: Gases that trap heat from the sun in our planet’s atmosphere, keeping it warm.

IPCC: The Intergovernmental Panel on Climate Change (IPCC) is an independent body founded under the auspices of the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP).

Nationally Determined Contributions: Nationally Determined Contributions (NDCs) are climate pledges and action plans that each country is required to develop in line with the Paris Agreement goal of limiting global warming to 1.5°C.

The Paris Agreement: the Paris Agreement is a legally binding international treaty aiming to limit global warming to well below 2°C, preferably to 1.5°C, compared to the pre-industrial level.

“Humanity's actions are scorching the earth. 2023 was a mere preview of the catastrophic future that awaits if we don't act now. We must respond to record-breaking temperature rises with path-breaking action. We can still avoid the worst of climate catastrophes. But only if we act now with the ambition required to limit the rise in global temperature to 1.5 degrees Celsius and deliver climate justice” (UN Secretary-General Antonio Guterres 12 Jan 2024)

Climate Change and its Impact

United Nations Framework Convention on Climate Change (UNFCCC) defines climate change 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 time”¹. Climate refers to the average weather conditions in a particular area. Climate change is the most dominating issue in today's world. Since the earth's climate has been changing continuously, over the last 800,000 years, there have been 8 cycles of ice ages and warmer weather conditions². Fluctuations in land and ocean temperature beyond the natural levels, aberrant trends in seasons, and unexpected rainfall patterns are reported globally. The average temperature on Earth is associated with the concentration of greenhouse gases. Since the industrial revolution, global temperature has been rising continuously with increasing GHG emissions that constitute about two-thirds of carbon dioxide which is resultant of burning fossil fuels³.

¹<https://unfccc.int/resource/ccsites/>

²<https://climate.nasa.gov/evidence/>

³<https://www.unep.org/facts-about-climate-emergency>

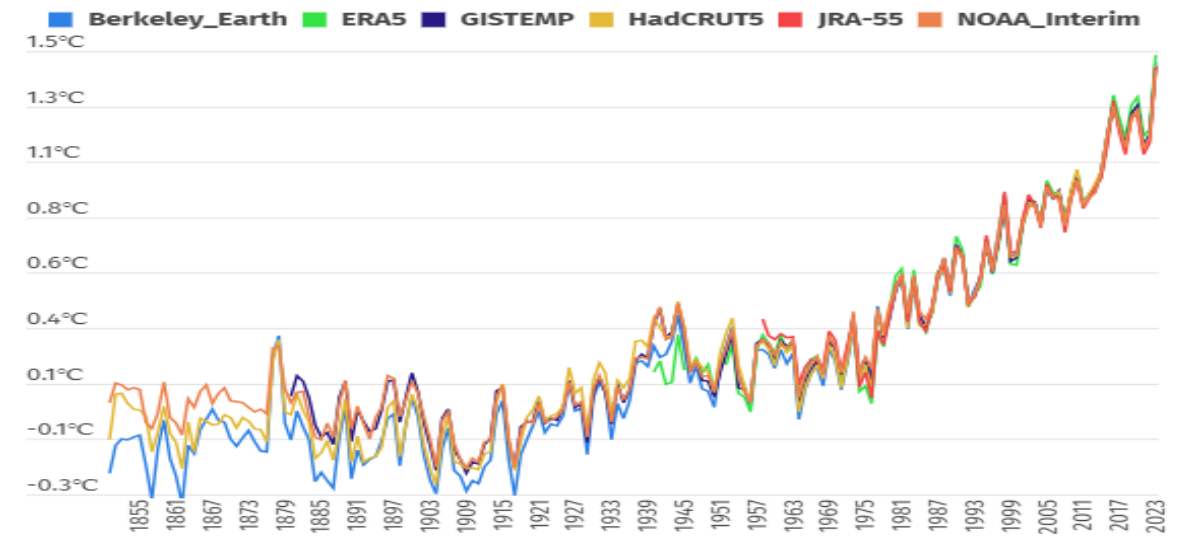


Figure 1: Global mean temperature from 1855-2023

Source: WMO, 2023⁴

The above figure shows the global mean temperature from 1860-2023. In 2019, the World Meteorological Organisation reported that the average temperature around the globe is 1.1 degrees Celsius. The result of 1.1 degrees could be seen in increasing heatwaves, droughts, winter storms, flooding, hurricanes, and wildfires⁵. In 1938, a scientist named Guy Callendar first discovered that the temperature of planet Earth was getting warmer⁶. He argued that industry carbon dioxide (CO₂) emissions are responsible for global warming. The United Nations Intergovernmental Panel on Climate Change (IPCC) prepare an assessment report that provides updates about the science behind changing climate, as well as information about its socio-economic impacts, feasible adaptation plans and mitigation options. IPCC assessment report on climate change developed the link between human activities and climate change. The following table presents the key findings of all these reports.

⁴ World Meteorological Report,2023; <https://wmo.int/publication-series/provisional-state-of-global-climate-2023>

⁵ <https://www.unep.org/facts-about-climate-emergency>

⁶ <https://www.discover.ukri.org/a-brief-history-of-climate-change-discoveries/index.html>

Table 1: IPCC Assessment Reports

Year	Reports	Key Findings
1990	1 st Assessment Report	The concentration of GHGs including carbon dioxide, nitrous oxide, methane and Chlorofluorocarbons (CFCs) are increasing significantly as a result of human activities.
1992	2 nd Assessment Report	Two significant developments regarding the earth's climate and humans are (I) the concentration of GHGs, burning of fossil fuels and agriculture making the temperature warmer and (ii) Human societies are becoming vulnerable to climate hazards.
2001	3 rd Assessment Report	Over the last 50 years, the warming of the earth's temperature has been attributed to human activities.
2007	4 th Assessment Report	There is a medium level of confidence that the effects of regional climate change on natural and human environments are showing up.
2014	5 th Assessment Report	Human influence on climate change is evident. Current levels of GHGs are the highest in history.
2023	6 th Assessment Report	Without any doubt, human activity, mainly the release of GHGs is the primary driver of global warming. There has been a persistent rise in GHGs worldwide.

Source: IPCC⁷

Understanding how human activities are impacting the environment is critical for addressing this issue. To lessen the impact of global warming Denmark, Chile and Sweden developed frameworks, laws and policies to adapt to the changing climate in their own countries also providing support to the developing world. These three countries are leading in climate action⁸. According to IPCC projections, there might be an increase in mean global temperature from 1.4 to 5.8° by the end of the 21st century. This increasingly warm weather has affected crop production, the hydrological system, sea level, and ecosystems and is expected to get worse in the coming years. More than 30% of the world's population bears lethal heat waves for almost 20 days every year. World Metrological Organisation reported 2019 as the second hottest year and 2023 was reported as the hottest year globally by a huge margin. There were 240 natural calamities reported around the world in 2023 including wildfires, floods, earthquakes, cyclones and storms. Sea surface temperatures were extraordinarily high for most of the months, coupled with intense maritime heatwaves. Levels of sea ice in the Antarctic were the lowest ever recorded, minimum in February and a maximum in September⁹. The realisation of climate change is the most alarming global challenge humanity is facing, everyone's future is at stake, but not equally. The impact of climate change has been severe for tropical countries, which

⁷ <https://www.ipcc.ch/reports/>

⁸ <https://earth.org/countries-climate-policy/>

⁹ <https://wmo.int/news/media-centre/climate-change-indicators-reached-record-levels-2023-wmo>

mainly constitute developing countries. Developing countries with poverty and scarce resources are the most vulnerable to changing climate conditions as compared to the developed world with stronger adaptability capacity. Asia is considered to be one of the most vulnerable regions to changing climate conditions due to its unique features including population, geographical location, GHG emissions and economic structure from 2021 to 2022 weather calamities ranging from China to Pakistan demonstrated the increasing impact of climate change in Asia¹⁰. In Asia, freshwater availability is in a crucial position as it is projected to decline and will brutally impact more than a billion people by the year 2050¹¹.

Impact of Climate Change on South Asia

For South Asian regions climate change is the most pressing issue at hand, as their economies and societies are the most affected by climate change so far. These countries are heavily populated with masses living along the coastal areas, depending majorly on fisheries and agriculture for livelihood putting them at high risk. Most of these countries have witnessed a sharp decline in crop production as a consequence of rising temperatures and climate-related diseases were also recorded in some countries. The table above presents climate risk for South Asian countries.

Table 2: Climate Risk for South Asian Countries¹²

	Afghanistan	Bangladesh	Bhutan	India	Nepal	Pakistan	Maldives	Sri Lanka
Sea-level rise	-	High	-	Modest	-	Modest	High	High
Glacier retreat	High	High	High	High	High	High	-	-
Temperature increase	-	High	High	High	High	High	Modest	High
Floods more frequent	-	-	Likely	High	High	Likely	High	-
Droughts more frequent	Likely	High in some areas	-	High	-	Likely	-	-

Source: M., Zia (2011)

¹⁰ <https://credeno.com/en/knowledge-hub/asia-climate-risks-are-top-vulnerability-asia>

¹¹ Mustafa, Zia. "Climate change and its impact with special focus in Pakistan." In *Pakistan Engineering Congress, Symposium*, vol. 33, p. 290. Lahore, 2011.

¹² Mustafa, Zia. "Climate change and its impact with special focus in Pakistan." In *Pakistan Engineering Congress, Symposium*, vol. 33, p. 290. Lahore, 2011.

Table 3: Climate Security Index of South Asian countries¹³

Countries	Ranking	Values
Bangladesh	1 st	0.871
Afghanistan	2 nd	0.868
Pakistan	3 rd	0.865
India	4 th	0.840
Maldives	5 th	0.837
Bhutan	6 th	0.833
Sri Lanka	7 th	0.809
Nepal	8 th	0.51

Source: S., Aneel & A., Sheraz (2024)

The climate security index for South Asian countries is given in Table 3. South Asian region is also vulnerable to Climate security. Bangladesh is the most vulnerable while Nepal lies at the end with a value of 0.51. Pakistan is ranked in third position with a value of 0.865. It implies that despite being an insignificant emitter of GHGs with only 0.9%, Pakistan is highly exposed to the effects of global emissions.

Climate Change in Pakistan

Pakistan, a land of natural resources, fertile land, gas reserves, and mineral deposits is ranked on the global climate index as 5th most vulnerable country to climate risks¹⁴. This indicates that the country will continue to witness climate calamities like the disastrous floods in 2022. The devastating floods of 2022 affected 33 million people and 8 million were displaced. 1,700 people lost their lives out of which one-third were children. The total flood damage to agriculture, livestock and fisheries sectors totalled PKR 800 billion (\$3.7 billion)¹⁵. The Floods of 2022 were caused by multiple reasons including high precipitation, melting of glaciers, and development of an intense low-pressure system over the land area due to heatwaves in May and June¹⁶.

Although the country contributes to only 0.9% of global carbon emissions but still floods and droughts have become regular for the country coupled with changes in agricultural patterns, limited access to fresh water, and loss of biodiversity. Major contributions of GHG emissions are energy, agriculture (37%), Transportation (9%), Industry (5%), Land use, Land use change

¹³ Salman, A (2024). "Climate Security Index: Analysing South Asia's Climate Resilience," n.d., <https://ipripak.org/climate-security-index-analysing-south-asias-climate-resilience/>.

¹⁴ <https://www.germanwatch.org/sites/default/files/>

¹⁵ <https://www.undp.org/pakistan/publications/pakistan-floods-2022-post-disaster-needs-assessment-pdna>

¹⁶ Mallapaty, Smriti. "Why are Pakistan's floods so extreme this year." *Nature* 16 (2022).

and forestry (5%) and water disposal (4%).¹⁷The annual mean temperature of Pakistan over the past 50 years increased to 0.5° and is expected to increase by 3°C – 5°C with the existing global emission, and even higher with high global carbon emissions by the end of the century. 39% of Pakistan’s population lives in poverty and loss of livelihood by floods and droughts have added to the difficulties. Women and children are prone to malnutrition due to damaged livelihoods, especially in rural areas of Punjab and Sindh. The figure below shows the average vulnerability to climate change by provinces with Punjab being the most vulnerable province. However, the most affected district by climate change is Chitral and Lahore is the least affected¹⁸.

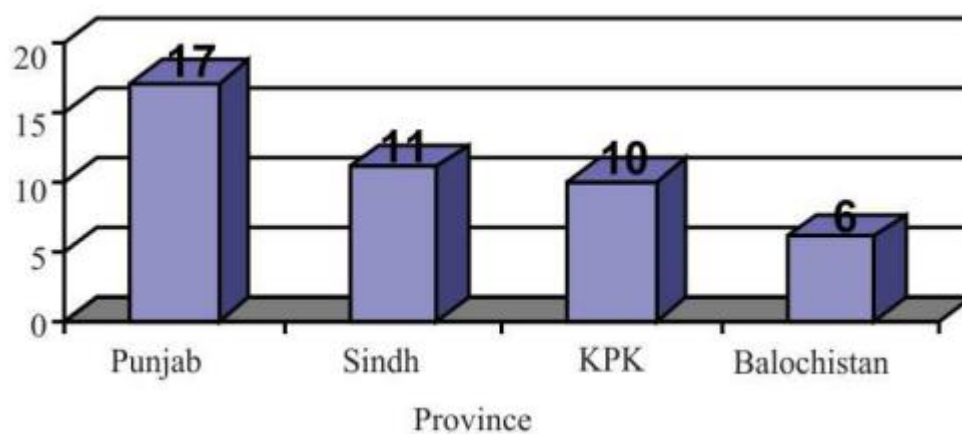


Figure 2: Average Ranking of Vulnerability by Provinces¹⁹

Source: R., Arif & S., Aneel (2013)

Pakistan has made significant contributions to global climate diplomacy. In 1992, presided over the G77+ China group of nations, in 2022 served as chair when the loss and damage fund was initiated. However, climate governance has not received strong leadership at home resulting in a gap in climate finance. Local governments are non-existent in many regions of the country. Therefore, District disaster management authorities (DDMAs) are run by district commissioners²⁰. After the 18th amendment to the constitution of Pakistan, climate change became a provincial issue with the Ministry of Environment handed over to the provinces

¹⁷ Government of Pakistan (2021), Updated Nationally Determined Contributions: <https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf>

¹⁸ Rahman, Arif, and Aneel Salman. "A district level climate change vulnerability index of Pakistan." *Centre for Environmental Economics and Climate Change (CEECC) Working Paper 5* (2013).

¹⁹ Rahman, Arif, and Aneel Salman. "A district level climate change vulnerability index of Pakistan." *Centre for Environmental Economics and Climate Change (CEECC) Working Paper 5* (2013).

²⁰ financing climate action: enhancing effectiveness and transparency in pakistan’s climate governance frameworks: <https://transparency.org.pk/publication/>

which implies that planning and policy implication became a local issue. To address the changing climate Punjab government took initiatives like A draft Policy (2017) and an action plan (2021). However, they remained unapproved to date. Given the constantly changing climate scenarios, new data and relevant reports will be required. Khyber Pakhtunkhwa adopted the KP Climate Change Action Plan (2022) and KP Climate Change Policy (2022) addressing the issues of vulnerable communities and planning to create opportunities for gender inclusion to mitigate the adverse impacts of climate change. On the other hand, the Sindh Climate Action Plan (2022) was approved but the action plan has not been tailored. Similarly, Balochistan drafted the Balochistan Climate Change Policy which is still under development, Azad Jammu & Kashmir adopted the AJ&K Climate Change Policy (2017) and GB Climate Change Strategy and Action Plan(2017) by Gilgit Baltistan²¹. The Punjab government has allocated a whopping \$1.4 billion for climate-related initiatives²². However, the Sindh government's climate budget for the last 16 years equated to PKR 20 billion is less than the PKR 27.5 billion cost of Malir Motorway, a mega road project²³. Since all the provinces are differently vulnerable to climate change the finance requirement also differs accordingly.

The global climate index reported that from 1998-2018, almost 10,000 lives were lost due to unprecedented climate events. To recover from the losses and to adapt to future climate-related calamities, the urgency to act is even clearer.

Climate Finance, Sources, Instruments & Objectives

Climate finance is described as a route for financing funds to aid climate change mitigations and adaptation actions. It is based on the principle of “common but differentiated responsibility and respective capabilities” which implies that developed countries will provide financial assistance to developing countries that are more vulnerable to changing climate conditions. An International Agreement under the United Nations Framework Convention on climate change to reduce Greenhouse gas emissions was adopted on 11th December 1997 known as the Kyoto Protocol. During its first commitment period (2008-12) participating countries pledged to

²¹ financing climate action: enhancing effectiveness and transparency in pakistan’s climate governance frameworks: <https://transparency.org.pk/publication/>

²² <https://climatefinance.pk/events-press-cat/cop28-panel-highlights-punjabs-climate-finance-landscape/>

²³ <https://thecitizenry.pk/2023/09/26/big-claims-small-expenditures-battered-by-heatwaves-and-floods-sindh-spent-less-than-half-its-climate-budget-in-16-years/>

decrease their emission by an average of 5% below the 1990 level²⁴. However, in its second commitment (2013-2020) parties agreed to cut GHG emissions by at least 18% below the 1990s level²⁵. During the UN Climate Change Conference (COP 21) held in Paris, France on 12, Dec 2015, signed an international treaty on climate change called The Paris Agreement. The objective of the treaty is to keep “the increase the global average temperature well below 2°C above the pre-industrial levels” and to continue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels”²⁶. Paris Agreement serves as a landmark climate change process because it brought all the nations to fight climate change and adapt to its effects. This agreement provides a financial, technical and capacity-building support framework to help the most vulnerable countries to the changing climate conditions. It states that the developed countries will provide financial assistance to the developing countries for mitigation and adaptation against the impacts of changing climate.

Climate finance is required for mitigation policies, to reduce GHG emissions large-scale investments are necessary. Also, it is crucial for adaptation as significant financial resources are required to help societies strengthen against the adverse impact of changing climate conditions. Sources of climate finance can be public or private, national and international, multilateral or bilateral. Some multilateral financial institutions include the Asian Development Bank, European Investment Bank, International Financial Corporation, Islamic Development Bank, and International Bank for Reconstruction and Development²⁷. Green Climate Fund (GCF), Adaptation Fund (AF), and the Global Environment Facility (GEF) are multilateral funds developed by the United Nations Framework Convention on Climate Change (UNFCCC) as financial instruments for providing financial assistance to developing countries.

²⁴ https://climate.ec.europa.eu/eu-action/international-action-climate-change/kyoto-1st-commitment-period-2008-12_

²⁵ https://unfccc.int/kyoto_protocol

²⁶ <https://unfccc.int/process-and-meetings/the-paris-agreement>

²⁷ <https://unfccc.int/topics/climate-finance/resources/multilateral-and-bilateral-funding-sources>

Table 4: Instruments of Climate Finance

1. Grants	Grants are provided for non-revenue programs including capacity building, knowledge building and other ongoing initiatives in the recipient country.
2. Concessional Finance	Providing funds for projects that address major global development issues.
I. Thematic Bonds	Fixed-income financial instruments are issued to use debt-based solutions to address social and environmental issues.
a. Green Bonds	Provide funding for projects that improve the environment or mitigate the effects of climate change. Most of these are green “use-of-proceeds” bonds fully backed by the issuer’s balance sheet with revenue targeted for environmentally friendly projects.
b. Social Bonds	The “use-of-proceeds” bonds are used to raise finance for new and ongoing initiatives with positive social outcomes. Types of projects for which social bonds are used include job creation, affordable house pricing and socioeconomic progress.
c. Sustainability Bonds	The proceeds of these bonds are restricted for financing and re-financing a combination of green and social projects.
d. Sustainability-Linked Bonds	A form of sustainability bond that links the financing or bond structure to the coupon rate linked to the entity’s key performance indicators. If the entity fails to achieve the set objectives debt relief is cancelled as a penalty.
II. Market-Based Finance	
a. Debt-for-Climate swap	The bilateral or multilateral donor, private or non-governmental organisation writes off the portion of the nation’s debt in return for its commitment to environmental projects using domestic funds. Debt swaps are only done for climate mitigation and adaptation projects.
b. Debt Finance	To reduce the cost of projects by providing debt facilities in the form of credit lines or project loans.
c. Equity Finance	Provision of equity for climate mitigation projects by the government without guaranteeing repayment and acquiring ownership of the project.
3. Carbon Offset Funds	Specific initiatives aimed at reducing the carbon emissions or seizing the carbon i.e. taking out carbon dioxide and storing it to reduce carbon emissions.

Source: Financing climate action in Pakistan, UNDP²⁸

²⁸ Financing climate action in Pakistan: <https://www.undp.org/pakistan/publications/financing-climate-action-pakistan-solutions-and-way-forward>

As the impacts of adverse climate conditions are observed in all sectors of the economy, the public budget and other funding mechanisms have started considering climate risk in investment decisions. Countries have set targets for lowering GHG emissions and building resilience against climate change through their nationally determined contributions (NDC), Long-term climate strategies (LTS), and national adaptation plans (NAPs). Climate finance is crucial for achieving such targets and building resilience against unprecedented climate conditions. Global efforts of integrating climate change in government policies and initiatives have gained momentum as the domestic and international climate finance prospects have increased. Climate financing is an essential catalyst for developing countries to incorporate climate change policies into their development agenda and promote mitigation and adaptation activities.

Pakistan being a part of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement has been performing its duties to assist in global efforts of combating climate change. Pakistan was reported as one of the first South Asian countries to establish a separate ministry to deal with climate issues i.e. Ministry of Climate Change and has established a National Climate Action policy. Being a part of the Paris Agreement 2015, Pakistan with the target of reducing 20% of projected emissions for 2030 has already aligned its nationally determined contributions (NDCs) with its economic and sustainable development vision.²⁹ To attain this target roughly \$40 billion in financing is required. Pakistan's nationally determined contributions (NDC) represent the nation's commitment to transitioning towards a climate-resilient economy. Pakistan's updated NDC has set a goal of reducing emissions by 50% during 2015-2030. The goal is to reduce emissions by improving the energy mix, promoting green transportation, avoiding new coal power plants, and prohibiting the use of imported coal for electricity generation. At COP 26, Pakistan has shown commitment to some ambitious mitigation actions and afforestation as the highlight of its nationally determined contributions. But to successfully achieve such ambitious commitments political willingness and climate finance are important. At this point, climate finance is a crucial element in Pakistan's climate action journey. According to NDC 2021, Pakistan's energy transition requires \$ 101 billion by 2030 and \$65 billion by 2040 for the finance required for associated expenditures. Finishing ongoing renewable energy projects, increasing hydropower capacity,

²⁹ Government of Pakistan (2021), Updated Nationally Determined Contributions; <https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf>

strengthening transmission systems, and eliminating coal are the businesses that require financing. Resilient, Recovery, Rehabilitation and Reconstruction Framework (2022), the 4R framework provides an extensive plan for recovery and reconstruction post-flood disaster, based on post-disaster need assessment (PDNA) performed in affected regions of the country. The 4RF approach emphasizes four strategic recovery objectives (SROs): improving governance and institutional capacities, generating employment opportunities, ensuring financial inclusion and participation, and improving basic services and physical infrastructure sturdily and sustainably. National Action Plan 2023, aims to implement adaptation measures, increase inclusion and foster successful collaboration among stakeholders involved. The NAP analyses climate risk and vulnerabilities and adaptation methods across 7 key areas including agricultural-water nexus, natural capital, urban resilience, human capital, disaster risk management, and gender, youth, and social inclusion.

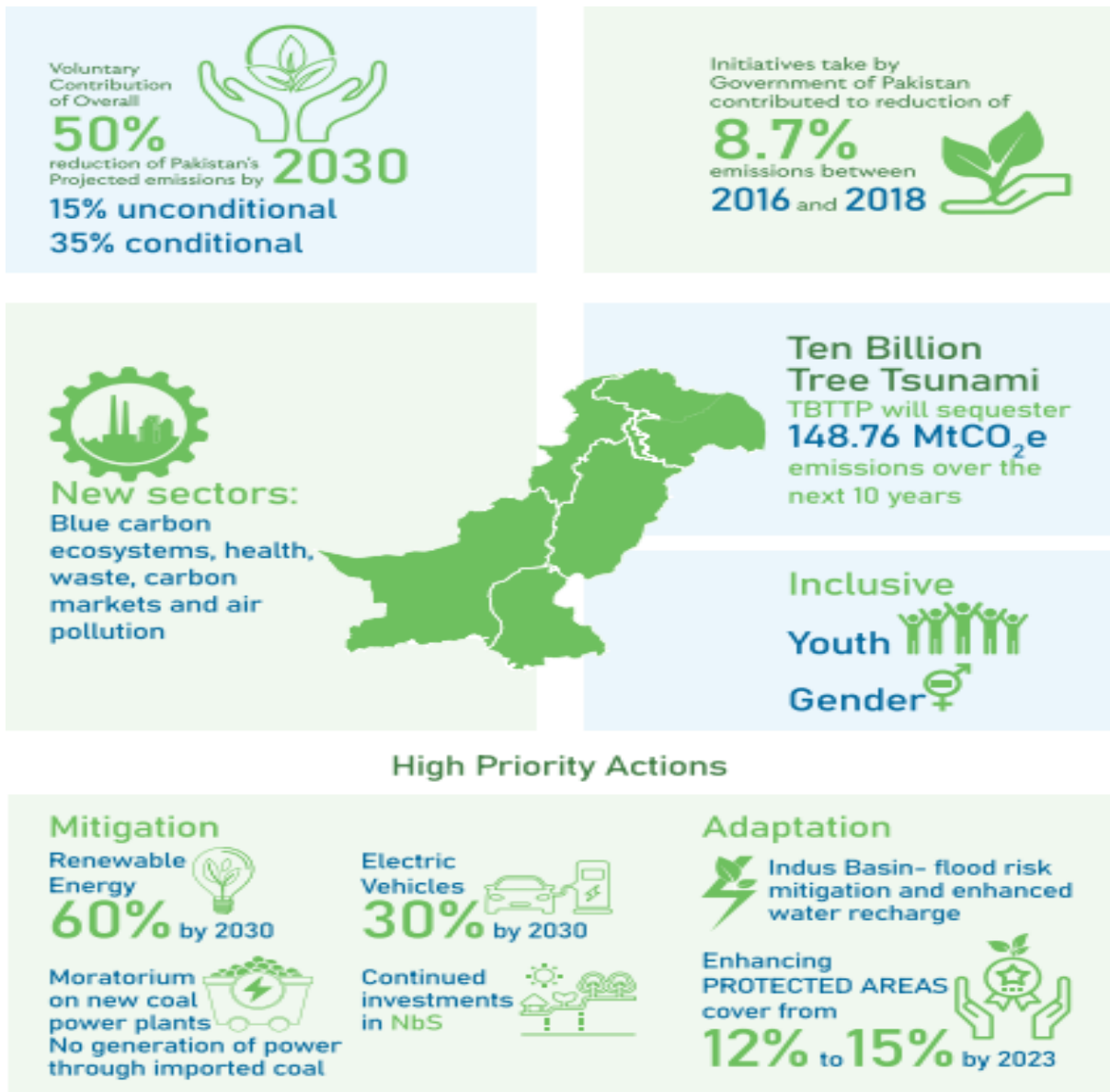


Figure 3: Pakistan's Updated Nationally Determined Contributions 2021

Source: Government of Pakistan, Nationally Determined Contributions³⁰

³⁰ Government of Pakistan (2021), Updated Nationally Determined Contributions;
<https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf>

To meet the set targets in these programs government of Pakistan has started the following initiatives.

Table 5: Initiatives by the Government of Pakistan

Ten Billion Tree Tsunami Program	A tree plantation project in its third year to achieve a carbon sequestration project in its third year. NDC expects that 500 M _t CO _{2e} will add to the global climate sink by 2040 if the Tsunami program is implemented successfully.
The Protected Area Initiative	Another adaptive action was launched on 29, June 2020 with of objective of fostering and enhancing vital wildlife habitats in Pakistan’s major national parks for preservation and ecological tourism purposes. The program aimed to increase protected areas from 12% to 15% of total land area by 2023 with an estimated expenditure of Rs. 3.9 billion.
Recharge Pakistan program	It aims to build resistance to climate change through eco-based adaptation and integrated management of flood risk. This initiative requires USD150 million investment to implement climate-resilient infrastructure.
Electric vehicles	The government of Pakistan aims at focusing on Electric vehicles, the goal is to 30% of vehicle sales (passenger sales and heavy trucks) by 2030 and 90% by 2040 specifically in urban mass transit. EVs are likely to be purchased by businesses and homes except for government procurement for internal usage. The government may offer incentives such as tax credits, to promote the adaptation of electric vehicles. Transitioning to electric vehicles might diminish jobs in the fuel business, and requires sector planning and temporary safety measures. Government plans on initiatives aimed to convert animal manure into methane as a fuel for rural families and public transportation in urban areas. Methane contributes to nearly 90% of this sector’s GHG emissions. Such initiatives in this sector are expected to generate profit. Also, there’s a potential for investment in such a project as start-up might be difficult.
Clean Production Technologies	Government plans on industrial mitigation through “clean production technologies” eco-standard, carbon trading incentives, and private sector planning to minimise emissions. Specific actions required for this initiative are by cutting the cement industry's GHG emissions.

In 2021, the total capital invested in Pakistan for climate activities equated to \$ 4 billion out of which 31% was sourced through the private sector and 69% from the public sector. Climate funding received from international sources included \$3,358 million (84%), government development partners contributed \$2.31 billion (58%) and \$ 1,048 million (26%) from private sector investors. On the other hand, finance generated by domestic sources was only \$ 650 million i.e. 16% of total climate finance. The private sector contributed only \$200 million (5%)

and the public sector contributed \$ 450 million (11%). The table below presents an overview of climate-related projects by different international organisations.

Table 6: Projects funded by the International Organisation

	Projects	Total Budget
<i>Asian Development Bank</i> ³¹	Preparing Kurram Tangi Integrated Water Resources Development Project	\$5Million
	Preparing Climate-Resilient Agriculture and Natural Resources Development Project	Technical assistance special fund \$2.25million Climate change fund \$750,000
<i>United Nations Green Climate Fund (GCF)</i> ³²	Pakistan Distributed Solar Project SAP024: This project provides customised financing options for distributed solar PV options in Pakistan. GCF guarantee facility will be used to finance 43MW of solar PV installation for houses, agri-businesses, and small and medium-sized enterprises and approximately 848.7k tonnes of emissions will be avoided.	\$54 million GCF Financing \$10 million Co-financing \$44 million
	Transforming the Indus Basin with Climate-Resilient Agriculture and Water Management FP108: this project will boost the country’s ability to use the knowledge to adapt to the effects of climate change on agriculture and water management. It will strengthen farmers’ climate resilience through skills, knowledge, and technology development efforts.	\$47.7 million GCF financing \$35 million Co-financing \$12.7 million
	Green BRT Karachi FP085: this project initiates building a zero-emission bus rapid transit (BRT) system that is safe and accessible to all in Karachi. The project seeks to build a 30km long completely segregated rapid bus transit (BRT) system using biomethane hybrid bus feet.	\$583.5 million GCF Financing \$ 49 million Co-Financing \$534.5 million
	Scaling-up of Glacial Lake Outburst Flood (GLOF) FP018: the project aims to construct 250 engineering facilities including dams, spillways, ponds, tree plantation and drainage to reduce risk. The capacity to react to flood scenarios will be enhanced by disaster management policies and by introducing weather monitoring stations.	\$37.5million GCF Financing \$37 million Co-financing \$0.5 million

³¹ <https://www.adb.org/projects/>

³² <https://www.greenclimate.fund/countries/pakistan>

<i>Islamic Development Bank</i> ³³	Signed agreement to finance for construction of 800MW Muhammad Dam and Hydropower projects in KPK for the provision of clean water to 2 million residents of Peshawar and support irrigation of new farmland.	\$189 million
<i>Global Environment Fund</i> ³⁴	12 national projects	\$37.44 million
	15 regional projects	\$174.7 million
<i>Adaptation Fund</i> ³⁵	Sustainable actions for ecosystem restoration in Pakistan (SAFER Pakistan)	\$10,000,000

Pakistan has been receiving grants for adaptation and mitigation projects from different bilateral sources. Major Bilateral donors of Climate finance for Pakistan include Australia (\$4.88 million), Germany (\$ 25.55 million) and Japan (\$ 48.91 million)³⁶.

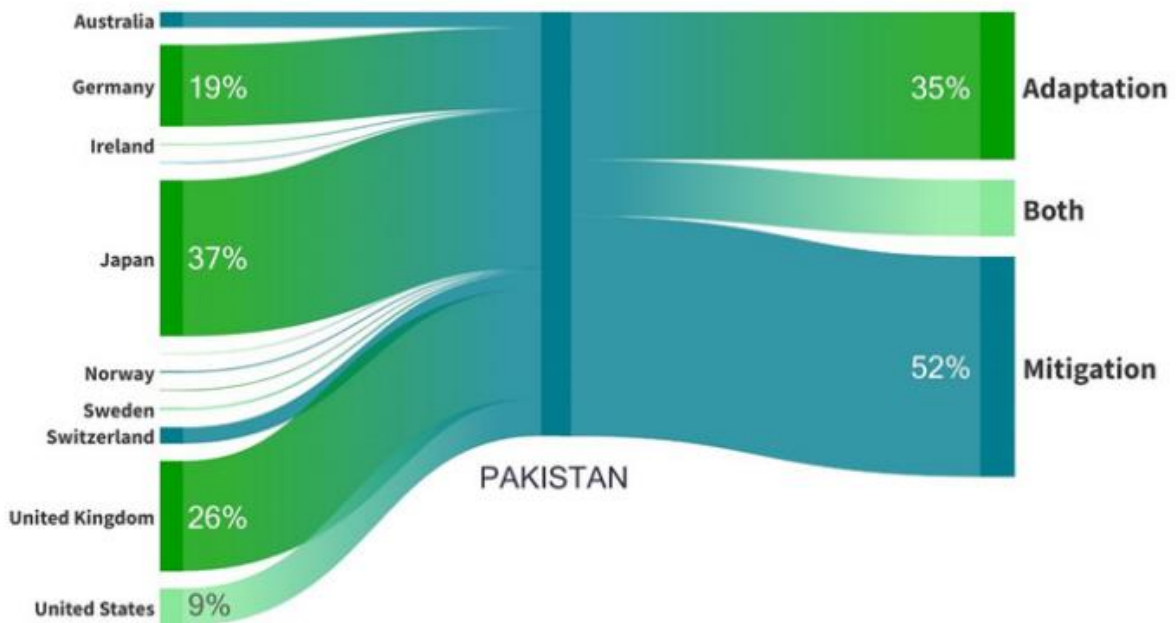


Figure 4: Bilateral Climate Finance for Adaptation and Mitigation Actions

Source: Transparency International Pakistan³⁷

³³ <https://www.isdb.org/news/isdb-signs-financing-agreements-amounting-to-us-180-million-for-mohmand-dam-and-hydropower-plant-project-to-support-pakistans-green-agenda>

³⁴ <https://www.thegef.org/projects-operations/country-profiles/pakistan>

³⁵ <https://www.adaptation-fund.org/project/sustainable-actions-for-ecosystems-restoration-in-pakistan-safer-pakistan/>

³⁶ financing climate action: enhancing effectiveness and transparency in pakistan’s climate governance frameworks: <https://transparency.org.pk/publication/>

³⁷ financing climate action: enhancing effectiveness and transparency in pakistan’s climate governance frameworks: <https://transparency.org.pk/publication/>

Challenges in Climate Finance

International climate finance is flawed and misleading. In 2020, the “true value” of climate finance by developed nations to developing countries was just \$21-24.5 billion against the reported figure of \$83.3 billion³⁸. The promise made by developed nations of providing \$100 billion every year to developing nations has been fulfilled just once i.e. in 2022-2023³⁹. Moreover, the gap between mitigation and adaptation finance continues to grow. In 2021, estimated adaptation finance for developing countries decreased by 15% as of 2020.⁴⁰ The disparities between funds allocated by developed countries and the adaptation requirements of the developing world have widened. The provision of \$100 billion every year by the developed countries and the promise of increasing the collective provision of climate finance for adaptation agreed upon in the Glasgow Climate Pact 2021 is not sufficient to fill the needs⁴¹. The government of Pakistan recognises that “financing the mitigation and adaptation gap” is a challenge. As per the NDC report, the finance required for NDC implementation in the year 2030 will be roughly equal to \$200 billion⁴². According to the World Bank, the total financing required for Pakistan to meet climate challenges for 2023-2030 equated to \$348 billion, out of which \$152 billion is required for adaptation measures and \$196 billion for decarbonisation⁴³. Over the last 10 years, Pakistan collectively received \$1.4-2.0 billion per year, that too in the form of loans⁴⁴. International climate finance is contributing to the existing debt crisis by being dominated by loans that too with highest share of non-concessional loans. With the 78% debt-to-GDP ratio, there’s little room in the budget to fund climate action.

³⁸ Climate Finance Short-changed: The real value of the \$100 billion commitment in 2019–2020: <https://policy-practice.oxfam.org/resources/climate-finance-short-changed-the-real-value-of-the-100-billion-commitment-in-financing-climate-action-enhancing-effectiveness-and-transparency-in-pakistan-s-climate-governance-frameworks>: <https://transparency.org.pk/publication/>

⁴⁰ <https://weadapt.org/knowledge-base/vulnerability/unep-adaptation-gap-report-2023/>

⁴¹ <https://www.dawn.com/news/1791418/climate-finance-gap>

⁴² Government of Pakistan (2021), Updated Nationally Determined Contributions: <https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf>

⁴³ <https://www.undp.org/pakistan/publications/climate-public-expenditure-institutional-review>

⁴⁴ financing climate action: enhancing effectiveness and transparency in pakistan’s climate governance frameworks: <https://transparency.org.pk/publication/>

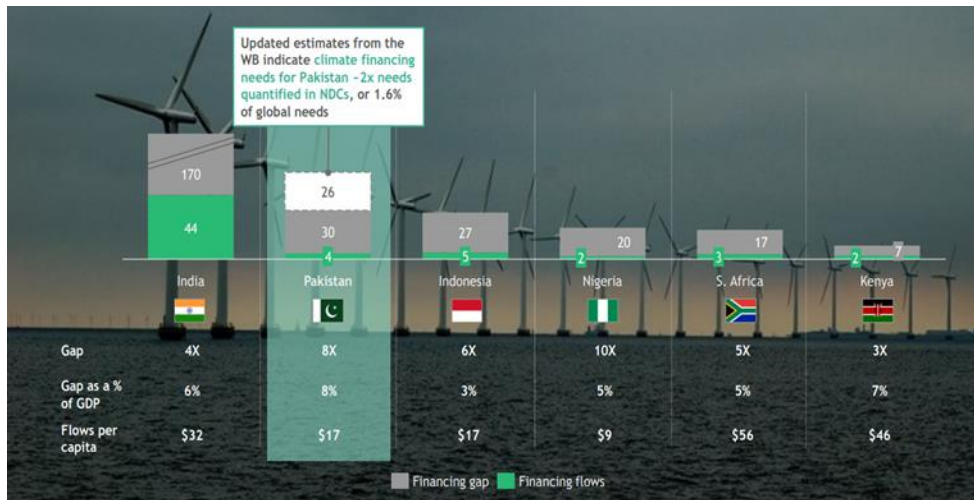


Figure 5:Country wise Annual Climate Financing Needs

Source: National NDCs, CPI country report 2018-2021⁴⁵

From the figure, it can be safely stated that there's a significant financing gap. Based on the level of financing received in previous years it can be put forward that Pakistan will receive nearly \$39 billion from public finance sources like Multilateral Development Bank financing and \$9 billion from public-private partnerships for infrastructure projects, which will not be enough to address climate action at priority basis. To achieve the ambitious targets of NDC21, building climate adaptability and shifting from fossil fuel acquiring international climate finance is essential as finance acquired by domestic sources is inadequate to achieve the set targets. However, climate finance is not affordable, available and accessible for developing countries. So far Pakistan has collaborated with the Green Climate Fund, Adaptation Fund, Global Environment Fund and some other bilateral funds. Despite being 5th most vulnerable country to climate change, Pakistan is experiencing quite little access to international climate finance. The economic loss and damage caused by the 2022 floods was way more than the disbursement received from all UNFCC funds including the Global Environment Facility, The Adaptation Fund and the Green Climate Fund together. World Bank approved a \$200 million programme for rural investments and a rehabilitation plan for Khyber-Pakhtunkhwa⁴⁶. The United Nations Green Climate Fund has approved \$11.4 billion for 209 projects in 128 countries. Pakistan has been allocated \$249 million for 7 projects. Despite being approved for years only 4 projects are under implementation and 25.7% of the total amount has been

⁴⁵National NDCs, CPI country report 2018-2021; <https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf>

⁴⁶ <https://tribune.com.pk/story/2443105/piecemeal-approaches-to-climate-change>

expended so far. On the contrary, Bangladesh which is also among the top 10 most vulnerable countries to climate change has received a whopping amount of \$441 million through the UN Green Climate Fund. Similarly, India has been allocated \$566.8 million for 10 projects. Both Bangladesh and India have already received the disbursement of \$85 million (48%) and \$315 million (40%) as of 2022.⁴⁷

Another concern with International Climate finance is the nature of the financial assistance. Despite the promises of providing financial assistance by developed nations to highly vulnerable countries funds are provided in the form of loans. Out of all the \$249 million approved by GCF, Pakistan has to pay back \$57.2 million as a loan to GCF. Moreover, of the total investment approved for ongoing 4 projects only 18% of financing is done directly through GCF. The maximum amount of these projects is being co-financed by Pakistani institutions like the Natural Rural Support Program and JS Bank lately. These reasons are enough to question the Green Climate Fund's commitment to helping Pakistan build a climate-resilient economy. How international organisations can justify demanding repayment with an interest amount? Despite being severely affected by climate change the reason for this discrimination is not clear. Pakistan is already under debt stress using most of its budget for debt servicing, neglecting social sectors like Education and health, and diverting investment from environmental issues.

Significance of Climate Finance

The role of climate finance is crucial for reducing Greenhouse gas emissions and building a resilient economy against unprecedented climate conditions. Climate finance plays an important role in the transition to low-carbon economies by funding projects that directly and indirectly reduce carbon emissions. Investment in initiatives like renewable energy resources, energy efficiency and environmentally friendly modes of transportation are examples of how climate finance can help in mitigation policies. Climate finance can help build a resilient economy against the impacts of climate change by financing initiatives like resilient infrastructure, executing an early warning system for extreme weather conditions and community-based efforts to adapt to climate change. Climate finance has emerged as an important source for developing countries to combat the impacts of changing climate conditions. However, its negative impacts can not be ignored. Climate finance intensifies economic risk. Finance used for mitigation policies is associated with economic risk more than

⁴⁷ <https://www.greenclimate.fund/countries>

adaptation finance. However, the adverse impacts of climate finance are negligible in countries with high political stability and less violent societies. Therefore, a stable political environment is required to reduce the economic risk attached to climate finance⁴⁸

As per the population projection, young people in Pakistan will reach 181 million by 2050 with an estimate of 4 million entering the working class every year. With an unemployment rate of 8% as of 2023, the conditions started worsening during the pandemic. The Ministry of Planning Development and Special Initiative estimated that 12.3 million – 18.5 million people were out of the workforce because of the global pandemic. Pakistan is mainly an agrarian economy providing livelihood to nearly 45% of the national labour force. Adverse climate conditions resulted in the loss of livelihood, productivity, and human and livestock well-being. Climate change became the cause of instability in the agriculture sector leading to the loss of crops and food insecurity. Effective utilisation of climate finance will result in employment opportunities not only in the agriculture sector but also by investing in renewable energy and energy efficiency projects will result in job opportunities across different sectors of the economy. Effective use of climate finance will also enhance research opportunities in the country. An improved research environment will eventually speed up the transition to a low-emission economy resulting in economic growth. In developing countries, women and children are the most vulnerable to climate atrocities getting affected by food and water scarcity. Climate finance is crucial for addressing social inequalities and improving the condition of marginalised groups by investing in climate-resilient infrastructure, provision of clean water facilities, and sanitation systems and by adopting sustainable agriculture techniques. Effective utilisation of climate finance not only builds a resilient economy but also leads towards a path of economic growth, technical advancement and social justice. Thus, effective utilisation of climate finance can help build a resilient economy for future generations.

The COP 28 UN Climate Change Conference was held in Dubai from 30 November to 13 December 2023 where representatives from more than 150 countries including the Head of state, civil society, youth, business and international organisations attended the conference. Climate finance was the central theme of COP 28 as the aims of the conference set by the host country included accelerating the energy transition, focusing on citizens' welfare and livelihood and fixing climate finance. All these goals can be achieved by delivering climate finance effectively. One of the key failures of climate finance is that developed countries have

⁴⁸ Zhao, Jinsong, Boxu Zhou, and Xinrui Li. "Do good intentions bring bad results? Climate finance and economic risks." *Finance Research Letters* 48 (2022): 103003.

failed to provide \$100 billion per year to developing countries. However, the finance flows have increased in previous years. India, China, Japan, and Brazil received the maximum funding leaving behind most of the developing countries deprived of their due share.⁴⁹ Key initiatives of COP 28 included a \$30 billion climate fund announced by the UAE president. \$25 billion was allocated for climate strategies and \$5 billion to stimulate investment funds for the global south. The loss and Damage fund became operational during COP 28 where developed countries have committed to provide more than \$700 for financial assistance to countries most vulnerable to climate change. UAE pledged \$100 million, United Kingdom \$40 million, Japan \$10 million, Germany \$100 million and USA \$17.5 million⁵⁰. The Caretaker Prime Minister of Pakistan introduced “Recharge Pakistan” a seven-year project aimed at using nature to adapt to climate change by transforming the country’s approach to flood and water resource management. The total budget of the project is \$77 million with \$66 million in financing from the Green Climate Fund.

Can debt for nature swaps solve Pakistan’s climate finance problem?

Debt for nature swaps are agreements where a debtor country agrees to protect its natural environment and take initiatives to build a resilient environment in return for debt relief. Debt swaps are increasingly becoming common worldwide. In 2022, the nature conservancy, the Inter-American Development Bank and the Barbados government finished a \$150 million debt swap in exchange for Barbados' commitment to preserve 30% of its territorial sea and economic zone⁵¹. Advantages attached to Debt swaps include enhancement in the use of resources, improvement in the ecosystem and improvement in biodiversity management. Water management can be improved if the government makes sure that debt for nature swaps if implemented are used for environmental projects. Due to the complex legal setup required for swaps their transactional cost is higher than other instruments. Also, engaging in debt swaps negatively impacts the international credit rating of the debtor country. For the effectiveness of debt swaps, long-term commitment on the side of the debtor country for implementing climate action is required. Pakistan can successfully implement Debt-for-nature swaps by addressing the following difficulties. Climate Finance Experts are required at ministry levels to make an actional plan for the successful implementation of debt swaps.

⁴⁹ <https://www.thethirdpole.net/en/climate/opinion-at-cop28-climate-finance-takes-centre-stage>

⁵⁰ <https://www.cop28.com/en/news/2023/11/COP28-Presidency-unites-the-world-on-Loss-and-Damage>

⁵¹ <https://www.dawn.com/news/1812956>

Conclusion

This paper addresses the issue of Climate finance and sources and instruments of climate finance in Pakistan. The analysis indicates that climate finance is essential for adaptation against adverse impacts of climate change and building a resilient environment. Although, Pakistan ranks as 5th most vulnerable country to the impacts of climate change. However, the International climate finance available is not sufficient for the mitigation and adaptation plans of the country. To achieve the ambitious goals set by the Nationally Determined Contributions (NDC 21) Pakistan needs an effective roadmap for generating green finance. The government needs to engage the private sector in finance generation through public-private partnerships. Also, the government of Pakistan should use concessional finance instruments like Debt for climate swaps and natural performance bonds as a means to deal with the two pressing matters in its hands i.e. Debt crisis and the adverse effect of changing climate conditions. Although climate change and green finance are the most talked about issues of the world, still it is important to raise awareness among the general masses including women and children. Instead of waiting for international financial assistance government of Pakistan needs to come forward with a low-carbon climate-resilient environment and form a strong local government as they are the first line of defence against climate calamities. As of 2023, total debt and liabilities owned by Pakistan equated to \$271.2 billion. Both Climate change and whooping debt are issues in the hands of the government of Pakistan. Pakistan can deal with both issues effectively by using instruments like Debt for swaps. Also, the Government should move forward with the Nature Performance Bond as a debt relief incentive. The first nature performance bond was proposed in 2021 however, there have been no developments after that. Since we are not able to bag enough international climate finance, the government should increase public-private partnerships and take steps to engage the general public on every level in this cause. There have been enough talks on how climate change should be addressed in seminars and conferences. However, there's a need to educate the general masses including women and children so that they can also take part in this initiative. The climate-related curriculum should be included at primary and secondary levels and local government bodies should take initiatives to educate the general masses so that they can play their role in this regard even if it's by planting a tree in their locality.

Policy Recommendation

- Pakistan has not been getting the desired foreign investment required for working on the Nationally Determined Contributions (NDC). There is a need for an alternative route for generating green finance required to build a resilient climate. Pakistan has great potential for adopting concessional finance as a financing source against climate change. Concessional finance is being used globally for green financing. Some of the instruments of concessional financing include Green bonds, Debt-for-Nature Swaps, Nature performance bonds and Carbon Pricing instruments. Using green bonds as a source of climate finance will help achieve its NDC targets timely. In 2021, the Water and Power Development Authority (WAPDA) launched a 10-year Green Bond for a hydro-energy project and raised \$500 million.⁵² Given the overwhelming response, SECP has approved national guidelines for green bonds to encourage the innovative financing model. The government should also use such initiatives to generate green finance.
- The Government needs to collaborate with the private sector, especially collaboration with the banking and industrial sectors is necessary. The role of SBP is crucial in this regard. SBP can promote financial markets and remove barriers to green finance.
- In developing countries, the most vulnerable communities to climate change are women and children who are at risk of malnutrition due to water and food insecurities. Green finance should be used for increased crop production and the provision of clean drinking water.
- Political stability and building a resilient environment are interlinked. The new government needs to formulate a clear reform plan for an equal, low-carbon and climate-resilient environment. The government should focus on the formulation of local government and improved governance structures as local governments serve as the first line of defence against unprecedented climate events like floods, droughts, heatwaves, glacier outbursts and urban flooding. Also, to attract foreign financing for addressing climate change, the government needs to show strong political commitment and willingness and needs to present this issue on international platforms in a way that attracts finances.
- Climate finance sourced from the domestic private sector is insufficient as compared domestic public sector. The private sector should be engaged in public-private partnerships and should be encouraged to acquire climate finance to address climate change.

⁵² [Pakistan issued first green bond | Green Finance Platform](#)

- Despite being the 5th most vulnerable country to climate change, Pakistan has not been getting its due share of climate finance against climate change. International funding is influenced by political power and preference. To become a priority of international donors, the government should focus on improving geopolitical ties and show a strong commitment towards building a resilient economy.

About the Authors

Dr. Aneel Salman holds the distinguished KSBL-IPRI Chair of Economic Security at the Islamabad Policy Research Institute (IPRI) in Pakistan. As a leading international economist, Dr Salman specialises in Monetary Resilience, Macroeconomics, Behavioural Economics, Transnational Trade Dynamics, Strategy-driven Policy Formulation, and the multifaceted challenges of Climate Change. His high-impact research has been widely recognised and adopted, influencing strategic planning and policymaking across various sectors and organisations in Pakistan. Beyond his academic prowess, Dr Salman is a Master Trainer, having imparted his expertise to bureaucrats, Law Enforcement Agencies (LEAs), military personnel, diplomats, and other key stakeholders furthering the cause of informed economic decision-making and resilience.

Maryam Ayub holds a M-Phil in Economics and Finance from PIDE. Her areas of expertise are Macroeconomics, Climate Finance and Development Economics.