Mainstreaming Climate Finance as a Policy Tool by Pakistan

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Abstract

As the global community is facing the common threat of climate change, every state is incorporating it into the national policy framework. This paper will highlight the importance of climate finance as a policy measure with a specific focus on the context of Pakistan. The study will deal with a comprehensive analysis of Pakistan's climate finance initiatives, examining the effectiveness, challenges, implications, ultimate incorporation, and utilization of finance for climate vulnerabilities. The main question of the study is taken as the empirical study of how mainstreaming climate finance as a policy tool by Pakistan can be effective for mitigation and adaptation purposes in Pakistan against climate change impacts. It assesses the country's capacity to mobilize, manage, and allocate finance as well. Furthermore, it will highlight the challenges and issues of why Pakistan is not able to manage to attract and mobilize climate finance globally as well as internally. This research contributes to the growing discourse on climate finance as a transforming policy tool, offering a valuable insightful policy for policymakers, researchers, and practitioners in climate change mitigation, and adaptation efforts in the context of Pakistan.

Keywords: Climate change, Climate finance, Policy tools, adaptations, mitigation

1. Introduction

There is a scientific projection that the world is moving toward the heinous impacts of climate change. Sea levels are rising, and oceans are getting warmer from the polar bears in the Arctic to marine life, turtles, crops, and wildlife, which are impacted by the vulnerabilities of climate change. Since the Industrial Revolution, the global annual temperature has increased by more than 1 degree Celsius[1]. Between 1880 and to 1990s, it rose to 0.07 degrees Celsius. The prediction is that it will further rise to 1.5 degrees Celsius by 2040. The whole of the globe is under the disastrous impacts of climate change in every sector of human life. Bhutan with zero net emission is one of the most vulnerable to face the impacts of climate change. Around the globe $300 billion worth of damages were done in 2017 and around fatalities 3300 in the same year. In the same year, the USA lost around $2.5 billion under the menace of climate change[2].

Climate Change is not a novel concept despite its ramifications that have been experienced in the 20th century. The whole world is facing the heinous impacts of climate change while in this scenario Pakistan has no exceptions. Pakistan has one of the lowest contributions to global temperature rising gases while paying the heaviest prices against this all. Pakistan has a contribution of carbon less than 1% but according to the reports of the Global Risk Index, Pakistan is 5th most vulnerable country in the world in the context of climate change. $4 billion loss during 2018-2020, loss of crops, loss of lives, and animals as a result of climate change. The International Monetary Funds provided substantial support in the context of climate change vulnerability in this way. International donors pledged to aid $8 billion for the recent floods in Pakistan in this way[3]. The glaciers are melting in Pakistan very fast; the case of the Sachen Glacier belt is one of the prominent examples of it. Similarly, the cycles of seasons in Pakistan have also been changing over the last few decades comparisons. The unwanted floods that caused havoc in Pakistan in the last years are another example of it. According to the June-November 2023 acute food security outlook by FAO and WFP, the situation of acute food insecurity may worsen in the coming months should the economic and political crisis deteriorate further, exacerbating the challenges caused by the 2022 flooding[4].

Climate finance is the financial support by local, national, or transnational companies, and organizations in form of the financial support -drawn from both public and private, and alternative sources of finance which has the main purpose of addressing climate-related issues under adaptations minutes and mitigations support mechanisms is known as climate finance. The conventions began with the impressive agenda of the United Nations Framework on Climate Change (UNFCC) while there was a long agenda setting there was very limited consensus building upon it and getting serious results according to it[5]. Most importantly the Kyoto Protocol and the Paris Agreement put new strength in enhancing the importance of climate change resilience policies in the international community and gave for the first time practical agendas to counter the menace of climate change at the maximum levels. Climate finance is also one of the counteract mechanisms proposed under these agreements under which the developed states will share their hands with the underdeveloped states to deal with the menace of climate change and its vulnerable impact on them[6]. The global transition from an Agricultural society to a modern industrialized society brought multifaceted costs, These costs have huge impacts on countries like Pakistan. Pakistan produces less than 1% of the carbon emissions while at the same time, it is among the most climate-prone impacted countries, it is on the hit list while lying in the 5th most vulnerable position in this regard. As the developing and most importantly the underdeveloped states can't bear the brunt of climate change alone, it is therefore the responsibility of the developed world to have such a platform that can assist them in this time of despair. Here is a statistical analysis given below in the charts that show the number of deaths due to flooding after the vulnerable impacts of climate finance[7].

Climate finance is the concept of public-private financing by transnational organizations, NGOs, MNCs, TNCs, and states for mitigating, and adaptation measures against the menace of climate change. It is the objective of the United Nations Convention on Climate Change (UNFCC)[8]. The Kyoto Protocol raised the agenda setting for finance. Similarly, the Paris Agreement also utilizes this agenda setting for climate finance to those states that are most vulnerable under this perspective. It reaffirms the responsibilities of the developed states to utilize the agenda setting for the underdeveloped states with the assistance of them under the vulnerability of climate change. Historically, The Global Environment Facility (GEF) has served as an operating entity in climate finance, COP16 in 2010 also established a climate finance operation mechanism which is known as the Green Climate Fund (GCF). COP sets eligibility criteria, allocations, and programs for funding. Similarly, SDGs for sustainability and funding for climate resilience in this regard. According to the United Nations 5 million people remain exposed to floods in Pakistan PDNA (Post Disaster Needs Assessment) has estimated damages exceeded $30 bn 1 of 10 of Pakistan's entire GDP[9]. Pakistan should utilize climate finance under the mainstreaming of the policy tool and institutionalize it effectively to take leverage of climate finance. India is prioritizing climate finance at G20 in November 2023. Recently, COP28 and especially the UAE set the agenda for climate finance and stressed the need to utilize it and make it effective, most importantly there are inclusions of human nature and human-centric policy in COP28[10].

2 Research Design.

There is a brief overview of the research design that has been taken in this paper.

2.1 Research Questions.

Primary Question.

How to mainstream climate finance as a policy tool in Pakistan?

Secondary Questions.

- Impacts of Climate Change in Pakistan on socio-economic and Geographical factors
- Why Pakistan is not able to use climate finance as a policy tool?
- How can Pakistan manage to make climate finance a policy tool?

2.2 Methodology

The research methodology is followed in detail.

Research Design

The research is based on a mixed method, both qualitative and quantitative analysis. The research will take both the already existing knowledge and well taking primary data from the resources of government organizations.

Research Type

The research is based on positivism or empirical study. As per as the research is concerned epistemology would be objective, ontology would be empirical, and methodology would be mixed.

Data

Both primary and secondary data have been taken for this research study.

3. Literature Review.

Literature review is one of the most important segments of the study. The literature review gives the researcher different types of questions, hypotheses, and findings which help the researcher to find some gaps in the existing literature as well as there can be some arguments taken by existing literature. In this literature review, they have taken thematically proportional study literature according to the requirements of the study. The literature gives an insightful insight into climate change as a major threat based on facts and data that are supported in this context. The literature gives a comprehensive understanding of climate change but the literature has in with a gap in that it doesn't highlight the importance of finance in the curb of climate change especially in the case study of underdeveloped states. Overall literature gives the practical solutions to the menace of climate change but there is a lack of supportive arguments in favor of what we can analyze at financial levels.

Investing in the Era of Climate Change by Bruce Usher explains the dynamical approach of the study, the book is full of research and evidence that is very supportive in the context of our research as well as of the factual positions of climate change. Bruce Usher, Professor at Columbia University gives a detailed analysis in his book, he takes the details of the current issue of climate change. There he discussed the current scenario under the prudent investigation of climate change in this way. Most importantly the book gives a perfect analysis of the perils of climate change and its massive impacts on every aspect of human life[11]. There are multiple questions including primary and secondary questions mainly of them which are why climate change is occurring, why climate change is a threat, and how to mitigate it. Effective strategies have been discussed in the book in detail while at the early of the review, the study gets a gap related to our study horizon which accumulates that the study is full of supporting evidence for our research. The study will be very effective in the case of taking arguments and supporting material while there is a gap in the study that shows how climate financial support is required in this context to deal with the menace of climate change.

How to Avoid Climate Change by Bill Gates also gives one of the important sides of the preparedness for climate change as he expresses with grief that we have put the earth to no place of return in this way so according to him there must be proper utilization of the climate change under adaptation measures where there is need of the economic assist while in this we can get the gap of the economic aid for those countries which are fragile in nature and can't sustain the mobility of the climate change preparedness as well as adaptations measures. Bill Gates gives the solutions to end and end the effects of climate change in his book[12]. The book demoted with a very impressive understanding of the facts and utilization of the research while the book depicts the imprints of neo-liberal paradigms theoretical framework which emphasizes the inclusion of human security while climate change is one of the essential threats of the modern century that have been discussed in the book in details. The book gives the research strong background of the issue and is also helpful regarding conducive arguments and facts and figures while there is a gap in the study in that there are limited projections of the causes of climate change and most importantly the apologetic stance of the industrialist the missing links of the underdeveloped states which are paying the price of the climate change is also one of the gaps taken from the literature.

Mallick, Seeme. "Reviewing climate change financial mechanism--designing national green climate fund for Pakistan.", gives a brief overview of climate funding. The importance of finance and funding has been highlighted in this research study with effective utilization of the data and figures that can be helpful for the research being conducted, similarly, the theoretical framework has been used by sustainability and development which lies under the neoliberal perspective. The gap that is being taken in this study is the missing links for the case of Pakistan and especially how Pakistan is looking forward to making the essentiality of climate finance one of the policy objectives in this regard.

The gaps have been taken from the above studies like that of the conducive understanding of climate change, extreme kinds of impacts of climate change, and impulsive impacts, especially over the countries that can sustain its destructive impacts due its economic vulnerabilities. In the early literature, there is a gap particularly regarding the mitigation of climate catastrophe through effective policy tools while at the end of the literature taken for the review process, there is indeed the gap that has been taken as the research in that particular research that how the climate finance is important for the vast study of Pakistan and most importantly how the climate finance can be made as a policy tool by Pakistan.

4. Why Pakistan needs of Climate Finance

Pakistan is the most vulnerable state that has to face the menace of climate change. There are several reasons behind that argument that can be made as support for why Pakistan needs climate finance in this regard while countering the impacts of climate change by mitigating and adaptation measures.

4.1 High vulnerable Results of climate change in Pakistan.

Pakistan is among the countries that are highly vulnerable and prone to climate change impacts. Pakistan is 5th most prone to climate change impacts in this regard. In August 2022, torrential monsoon rains triggered the most devasting foods in the entire history of Pakistan, over 33 million people were affected by the flood waters, a staggering number to the total population of Canada was impacted by a single year of overly monsoon rains that were one of the risky news in the history of Pakistan[13]. In 2022, the floods occurred due to a homogenous change of the patterns and these patterns are heavily impacting on the coming years more vibrantly in comparison to the past. Pakistan is producing less than 1 % of the carbon footprint yet is suffering the biggest consequence of climate change. According to the Global Climate Index reports Pakistan suffered a $3.8 billion loss and about ten thousand lives lost during 2018[14]. Azad and Jammu Kashmir saw the recent flow of the change in the pattern of the seasonal cycles, according to the meteorological reports in Pakistan the range of the seams is highly changing day by day, especially in recent years, the duration of the summer season has increased in Pakistan especially in the plain areas of Pakistan in this regards. Below is the figure showing the results of the annual rainfall changing patterns in Pakistan which indicate the disturbing horizons of the climate change impacts over Pakistan[15].

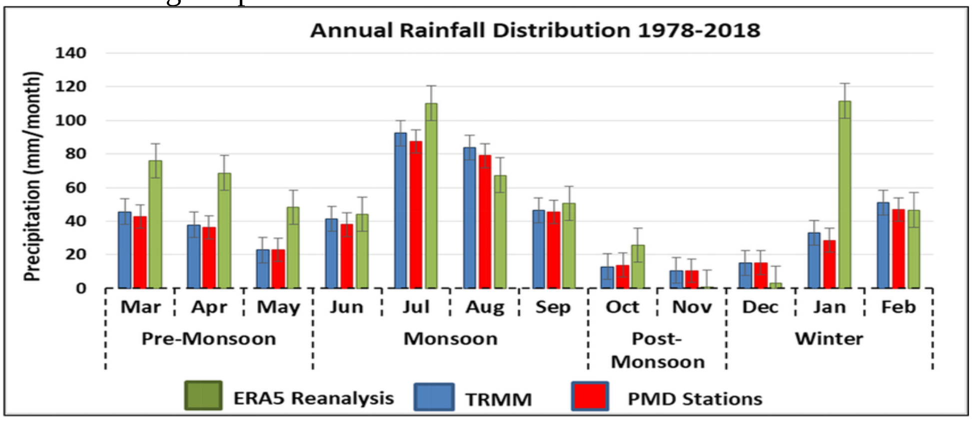

Figure 1 Annual Rainfall Distribution.Source: Environmental Science and Pollution Research[16]

4.2 Economic Cost by Pakistan due to Climate change

One of the important reasons why Pakistan must be prioritized for climate Finance is the economic cost that Pakistan is paying due to the climate change impacts. Pakistan faced high levels of economic cost due to the vulnerabilities of the climate change impacts in this regard. While keeping in mind the scenarios under some of the important reports, between 1992 and 2021, according to the World Bank report, climate change impacted Pakistan resulting in total damages of $ 29.3 billion in terms of property, and livestock, equivalent to 11.1% of 2020 GDP[17]. Significant events in Pakistan's history persistently occurred like droughts in Sindh Baluchistan and Southern Punjab similarly there are the floods the heat waves that have impacted the lives of the people and damaged the business of the people at a large scale, especially in the big cities at a larger ground. Similarly, the Country Climate and Development Report(CCDR) a group associated with the World Bank, reported 1700 deaths and a $30 billion loss on economic grounds have been noted[18].

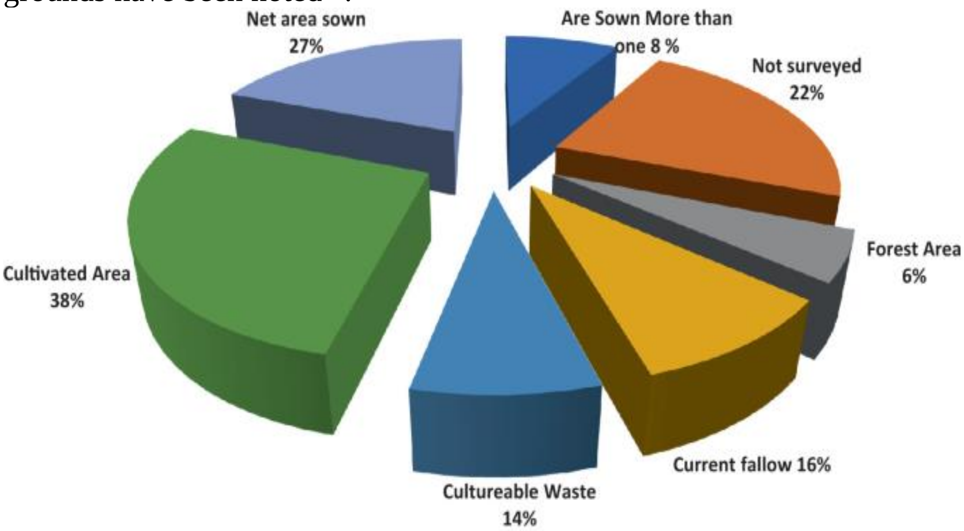

Figure 2Impacts of Climate Change over Economic Sector Source: SpringerLink[19]

4.3 Human and Infrastructural Costs Due to Climate Change in Pakistan

Pakistan is paying a huge price for the impacts of climate change, the number of disasters due to climate change every year destroys precious properties, infrastructure, and human lives. Most important is the lives of the people who are at risk phenomena due to the vicious impacts of climate change. For 33 million people, this year was one of the most painful years in the last few decades, more than 1700 people lost their lives in the 2022 Pakistan floods and almost 13000 people were injured in this flood[20]. According to the reports,40% of the young population is facing stunted growth due to the reason behind lack of food supply this is directly linked to floods result of climate change. If there were a flood, there would be no food, and eventually, this would impact the lives of the people. According to the reports those areas where there are high vulnerabilities of stunted growth, there is a high risk of the lack of food availability due to the floods. So, this is the biggest cost that Pakistan is paying due to the menace of climate change in Pakistan in this regard[21]. Similarly, there are a lot of impacts due to climate change on the infrastructure of Pakistan, bridges, homes, and other important areas were destroyed due to the vulnerabilities of climate change in Pakistan[22].

5. What are the Possible Hurdles in the Way of Making Climate Finance a Policy Tool in Pakistan?

There are several identified areas where it can be said that why Pakistan is not able to make climate finance a policy tool. In this part of the research, we shall discuss them in detail below.

5.1 Lack of Country's Dedicated Capacity Building

Unfortunately, Pakistan is not able to make effective policy making as a strong measure to get maximum benefits from climate finance due to a lack of dedicated capacity building at the state levels. Most importantly, there is the fact that Pakistan like countries has to change its entire fabric if Pakistan wants to go for nonrenewable energy resources, there is entirely a need for finance as Pakistan can't afford alone to transmit its energy resources to the nonrenewable energy without a substantial financial backdrop. Institutions are not that concerned regarding the policy-making about climate change, even though there are not sufficient staff and experts that are eventually required for this cause to be more comprehensive in this way. The Ministry of Climate Change in Pakistan even didn't have any plan suggestions for climate finance yet[23]. That is very hazardous news regarding the prioritization by the institution in this regard and how much Pakistan eventually gets from it. Last time a UK-based non-governmental organization offered some financial aid for the climate-based effects but unfortunately there was not enough data to represent the case of Pakistan which required the organization in that way to offer financial that was also one way that shows the negligence of the institutions. Similarly, there is a lack of consensus built by the government to make climate finance a policy tool in Pakistan[24].

5.2 Less Focus on Carbon Market and Unavailability of International Certification

The carbon market involves the trading of carbon credits which are the units of measurement representing the reduction or removal of one ton of carbon dioxide or its equivalent greenhouse gases. These markets aim to create economic incentives for businesses and countries to reduce their greenhouse emissions. One of the common certifications regarding the mechanism in the context of the carbon market is the Clean Development Mechanism (CDM) was established under the Kyoto Protocol[25]. The CDM allows the developed states to invest in underdeveloped countries to reduce emissions and relevant projects that can reduce the emissions at maximum levels like that of the renewable energy projects while they receive certified emission reduction (CER) credits in return which is very effective for those countries for in return[26]. Without certification, it is challenging for Pakistan and Pakistani entities to participate in the international carbon markets and similarly, without certification, there would be no trust and no investment based on climate-based finance in Pakistan that is, in other words, is essential to form the effective utilization of the carbon market. Many countries globally are planning to help these countries which are heavily impacted by climate change and Pakistan which is the most vulnerable state in this regard falls under the categories of those countries while considering this some of the European countries that are interested in investing in Pakistan under the climate finance mechanism but there is lack of the certification that is a big hurdle in the way of those countries to invest in Pakistan under the guise of the climate finance. Due to the lack of certification, many technological exchanges are also not possible in this way so ultimately, there is an entire need for certification for the mobilizations of climate finance in this regard[27].

6. How to Make Climate Finance a Policy Tool in Pakistan

There are several ways to get the desired results and to make climate finance a policy tool in Pakistan. It is also the need of the hour to make it a policy tool so that Pakistan may get its right to climate finance which is impeccably true in this regard. As the underdeveloped and even some of the developing states can't afford to transition to alternative resources of energy at sudden grounds it is a very serious step to have countable forms of the forum that can provide reputations in this regard so that it would have the best results for Pakistan like countries, where the country is already is facing acute economic strained and economic hurdles while at the same time, Pakistan major budget goes to fulfill the energy needs of the country which make very difficult to sustain the energy needs of Pakistan so, in short, this policy of the climate finance very effective to utilize the occurrence of the simultaneous results to get the benefits of the climate finance in this regards[28].

6.1 Make a Single-Window Operational Forum

There are different types of institutions which are dealing with a particular type of task by the given standards of the government in Pakistan. The Federal Board of Revenue deals with all matters related to tax collection and implementation while the larger hands, the finance ministry deals with the issuance of the financial matters of Pakistan in this regard. There are suggestions that there should be a single unit like one window operational institutions that should be given comprehensive operation autonomy, and there should be experts and think tanks that should make comprehensive policies related to climate change and climate finance. Although the National Disaster Management Authority works on disaster-related issues at the same time, this can't be managed at so many standards Instead, there should be a separate body to have an identified position regarding these issues to deal with at the best of the levels. Information sharing at a single unit would be a perfect idea to utilize an effective policy regarding climate finance in this way. This can be a very effective way to make climate finance a policy tool in Pakistan[29].

6.2 Political Prioritization of Climate Finance as a policy tool.

Climate finance needs to be done under political prioritization. According to a scholar, “There must be a party manifesto to aware the people and international community aware that Pakistan has the serious issue of climate change, and it must be dealt with at all the political forums in a very appropriate way. Pakistan is facing acute results of climate change and since some last years, climate change played a havoc with the country's every nook and corner.

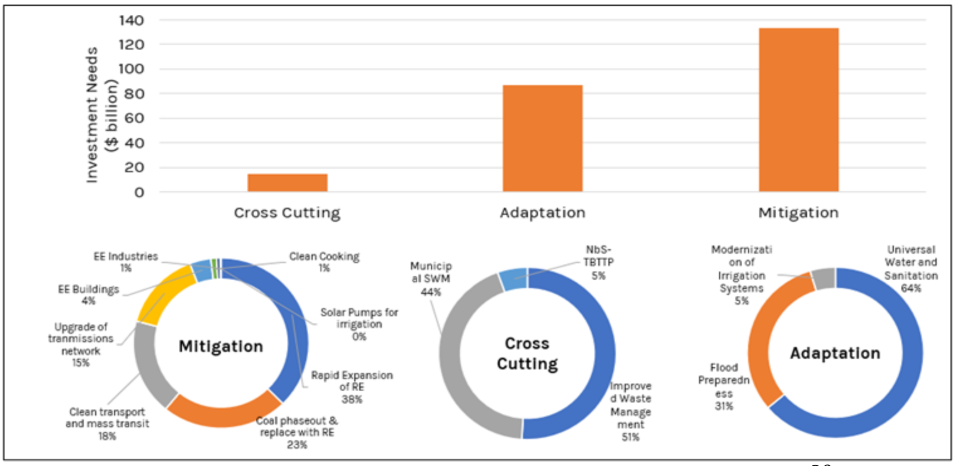

Figure 3 Investment Needs for Climate Source: SPDI[30]

The recent floods are a vital example of it, the glaciers are meeting. Pakistan which is already on the list of the most water-stressed countries is also facing this threat at the same time, so that is the need of the hours that government and political parties must make it a prioritized form of policy so that Pakistan can get some benefits from it. Especially that Pakistan which can't afford to go for the alternative of energy resources at that period is looking forward to the international bodies and financial investment in the renewable and green energy resources in this way"[31].

6.3 Availing Opportunity of Environmental Sustainable Bonds for Climate Finance

Recently, Pakistan has faced significant challenges in terms of trade deficit due to external debt repayments. The central reserves were downed from $20 billion in 2021 to $8.6 billion in 2022. Pakistan is offered Green Bonds as an alternative by the Global Credit Market. Global Sustainable Bonds comprise a $1 trillion market now, which makes up 10% of global bond assets. Pakistan was able to get a $500 million bond in 2021 which is a significant success while keeping in mind there must be a large-scale capacity to meet international standards by identifying green assets in Pakistan. Green Bonds are one of the principled opportunities for Pakistan where there is a need for standard Guidelines and Green Bonds Certificates that are essential to winning Green Bonds. China and India load the highest number of Green Bonds with an estimate of $12 billion by 2020. Pakistan has faced a great loss in the blue economy due to several factors most of them lack of integrated policy to utilize this platform due to which Pakistan is not able to secure Green Bonds respectively[32]. Below are two important graphs that show the investment needs of Pakistan Under the possible factors of green bonds while the second picture shows different data of countries under the postulate of Green Bonds.

6.4 Utilizing the Platform of Debt Swap in Climate Finance Mechanism

Debt swap is one of the efficient ways to get a kind of climate finance under the policy measure. The management of the public debt always remained one of the core issues of Pakistan, by this debt swap can be a useful option in this regard. Instead of paying the debt payment to the creditor organizations, Pakistan can utilize debt swaps for the support of the renewable energy sector. It would be easy for Pakistan as Pakistan is already part of the Debt Service Suspension Initiative(DSSI). Pakistan agreed to a debt swap in 2006 with Italy in return for sustainable projects for Afghan refugees[33]. According to reports, Pakistan needs $340 billion to face the challenges of climate change with debt and to GDP ratio of 78%.In 2022, the Barbados government, the Nature Conservancy a global environmental organization, and the InterAmerican Development Bank completed a $150 million debt conversion agreement in return for Barbodo's commitment to protecting up to 30% of its Exclusive Economic Zone (EEZ).

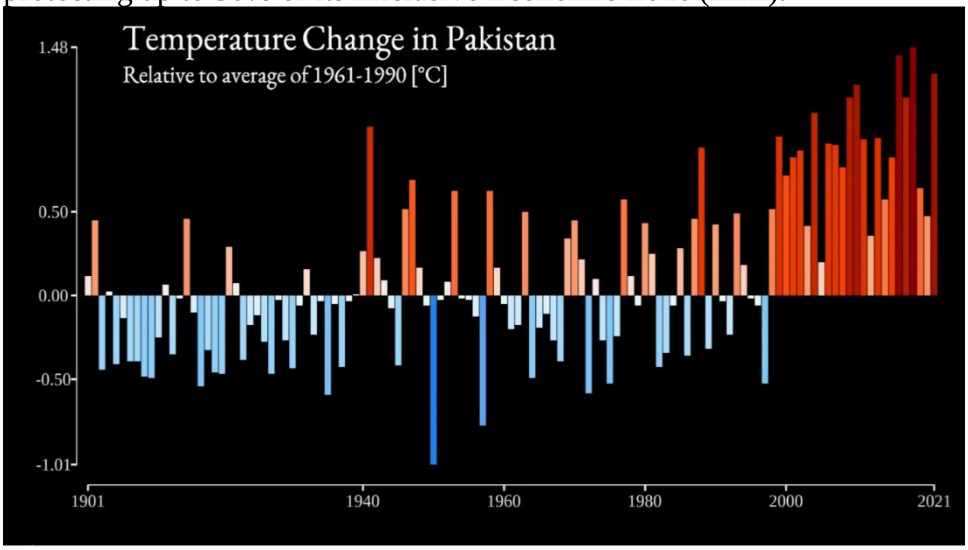

Figure 4Temperature Change in Pakistan Source: Bulletin of Atomic Scientists [34]

However, there is again a need for utilization of the project for the financial position of climate finance under debt financing for which there is peculiar data is required. Both IMF and World Bank have called for transparency and accountability mechanisms in support of foreign-funded projects[35].

Figure 5 Pakistan Foreign Debts.Source: The Express Tribune[36]

6.5 Climate Finance as a Discourse for a long term Solution

There must climate finance be made as a policy discourse. Pakistan needs to set an agenda at the national level to make climate changes under the major important tier of state policy, similarly, climate finance which is part and parcel of the issue must be made as a strong discourse for the country. Climate finance refers to the financial resources dedicated to addressing climate change and its impacts.it is a critical aspect of the broader policy discourse on climate change, involving the allocation and mobilization of funds to support mitigation and adaptation purposes. The discussion around climate finance encompasses various dimensions, including the resources of the funding, the mechanisms for distributions, and the overall effectiveness of financial instruments in achieving climate-related goals in this regard. discourse is a kind of strategy that compels international bodies to attract that country which has in dire need of anything, this applies to a similar kind of case in terms of Pakistan in such a way that shows the values of the discourse build-up in terms of the climate finance in this way[37].

6.6 Federal-Provincial Coordination

There must be an effective policy tool by coordination among the federation and the provinces in many of the terms to make the effective policy tool in climate finance an urgent need of the hour in this regard. there is a lack of a proper mechanism for information sharing in this regard, eventually, NDMA proved to be one of the effective examples in making coordination and effective utilization of the national disaster-related policies in Pakistan. there must be proper usage of information sharing the KPK is performing very amazingly in this regard[38].KPK is one of the better providers in getting better performance regarding information gathering and data utilization in front of the climate change in the country while at the same time, KPK is also moving ahead in the adaptions and mitigations measures in their ways, Tsunami trees project is one of the successful mitigation projects which was highly appreciated by the international community by the steps forwards of the KPK government[39].

6.7 Climate Finance Should make a Consistent Policy on the Political landscape.

Climate finance should be made a permanent and consistent policy by Pakistan in such a way that no coming government may change it for political gains or misuse of the policy. Climate change is not a political phenomenon but a genuine issue for the whole of humanity in this way it can be dangerous for everyone without making any distinction at any of the levels. So, there must be a very effective policy in this regard that must be sustained for longer terms so that the policy can work properly as well and the international communities that are working on climate finance would be able to get in according to their requirements in this way to adjust that requirement for the climate financing. This is the need of the hour to make it more effective so that international bodies will make sure of a better understanding of consistent information also they would find more confidence to deal with such a consistent environment[40].

7. Conclusion

By making the final comment under the conclusion of the research, there are indeed that is very effective and true findings of the research that Pakistan needs an effective climate finance policy that is a requirement of time and space. Pakistan is one of the most vulnerable countries in the wolf in terms of the impacts of climate change and recent years saw a dreadful picture of the climate cafe impacts in this regard eventually making it one of the most vulnerable states in terms of climate change impacts. Climate finance is a great step up in supporting underdeveloped and developing states like one of the examples of Pakistan. So, Pakistan must utilize this forum to get the maximum results to mitigate and adapt against the amendment of climate change.

References

1 Amanda MacMillan, Jeff Turrentine. "Global Warming 101." Definition, Facts, Causes and Effects of Global Warming, April 7, 2021. https://www.nrdc.org/stories/global-warming-101.

2 Mudassar Hussain, Abdul Rahman Butt, Faiza Uzma, Rafay Ahmed, Samina Irshad, Abdul Rehman, and Balal Yousaf. "A comprehensive review of climate change impacts, adaptation, and mitigation on environmental and natural calamities in Pakistan." Environmental monitoring and assessment 192 (2020): 1-20.

3 "Finance & Justice." United Nations. Accessed April 4, 2024. https://www.un.org/en/climatechange/raising-ambition/climate-finance?gad_source=1.

4 World Bank. 2022. "Pakistan: Flood Damages and Economic Losses over USD 30 Billion and Reconstruction Needs over USD 16 Billion - New Assessment." World Bank. October 28, 2022. https://www.worldbank.org/en/news/press-release/2022/10/28/pakistan-

flood-damages-and-economic-losses-over-usd-30-billion-and-reconstruction-needs-over-usd-16-billion-new-assessme.

5 W. P Mako, Nabi, I., Mahmood, A., & Khan, S. (2022, May). Recent developments in climate finance: implications for Pakistan. IGC.

6 Bhandary, Rishikesh Ram, Kelly Sims Gallagher, and Fang Zhang. "Climate finance policy in practice: A review of the evidence." Climate Policy 21, no. 4 (2021): 529-545.

7 T. Morita& Pak, C. (2018). Legal readiness to attract climate finance: Towards a low-carbon Asia and the Pacific. CCLR, 12, 6.

8 Bruce Usher. Investing in the era of climate change. Columbia University Press, 2022.

9 Bill Gates, How to avoid a climate disaster: the solutions we have and the breakthroughs we need. Vintage, 2021.

10 Seeme Mallick. "Reviewing Climate Change Financial Mechanism--Designing National Green Climate Fund for Pakistan." Available at SSRN 2466907 (2014).

11 Bhandary, Rishikesh Ram, Kelly Sims Gallagher, and Fang Zhang. "Climate finance policy in practice: A review of the evidence." Climate Policy 21, no. 4 (2021): 529-545.

12 Bill Gates. How to avoid a climate disaster: the solutions we have and the breakthroughs we need. Vintage, 2021.

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

14 Kashif Salik, Majeed, Sadia Ishfaq, Fahad Saeed, Elishma Noel, and Qurat-ul-Ain Syed. "Pakistan country situation assessment." (2015).

15Mohammad Aslam Khan, Jawed Ali Khan, Zulfiqar Ali, Imran Ahmad, and Muhammad Nauman Ahmad. "The challenge of climate change and policy response in Pakistan." Environmental Earth Sciences 75 (2016): 1-16.

[16] , H. Ali,Green Finance in Pakistan: A Path to Sustainable Economic Growth.

17 Shah Fahad, and Jianling Wang. "Climate change, vulnerability, and its impacts in rural Pakistan: a review." Environmental Science and Pollution Research 27 (2020): 1334-1338.

18 M. Munir Sheikh , N. Manzoor, M. Adnan, J. Ashraf, and A. M. Khan. "Climate profile and past climate changes in Pakistan." Global Change Impact Studies Center (GCISC)-RR-01 (2009): 1-189.

19 U. Mustafa, Baig, M. B., & Straquadine, G. S. (2021). Impacts of climate change on agricultural sector of Pakistan: Status, consequences, and adoption options. Emerging Challenges to Food Production and Security in Asia, Middle East, and Africa: Climate Risks and Resource Scarcity, 43-64.

20 World Bank. 2022. “Pakistan Urgently Needs Significant Investments in Climate Resilience to Secure Its Economy and Reduce Poverty: World Bank Pakistan Climate & Development Report.” World Bank. November 10, 2022. https://www.worldbank.org/en/news/press-release/2022/11/10/pakistan-urgently-needs-significant-investments-in-climate-resilience-to-secure-its-economy-and-reduce-poverty.

21 M. Munir Sheikh, N. Manzoor, M. Adnan, J. Ashraf, and A. M. Khan. "Climate profile and past climate changes in Pakistan." Global Change Impact Studies Center (GCISC)-RR-01 (2009).

22 Sadia Mariam Malik, Haroon Awan, and Niazullah Khan. "Mapping vulnerability to climate change and its repercussions on human health in Pakistan." Globalization and health 8, no. 1 (2012): 1-10.

23 Sajjad Ali, Ying Liu, Muhammad Ishaq, Tariq Shah, Abdullah, Aasir Ilyas, and Izhar Ud Din. "Climate change and its impact on the yield of major food crops: Evidence from Pakistan." Foods 6, no. 6 (2017): 39.

24 Stender, Frederik, Ulf Moslener, and Willem P. Pauw. "More than money: does climate finance support capacity building?." Applied Economics Letters 27, no. 15 (2020): 1247-1251.

25 Anil Gupta. "Climate change and Kyoto Protocol: An overview." Handbook of environmental and sustainable finance (2016): 3-23.

26 Abdul Waheed, Thomas Bernward Fischer, and Muhammad Irfan Khan. "Climate change policy coherence across policies, plans, and strategies in Pakistan—implications for the China–Pakistan economic corridor plan." Environmental Management 67 (2021): 793-810.

27 Amber Ajani, and Kees van der Geest. "Climate change in rural Pakistan: evidence and experiences from a people-centered perspective." Sustainability Science 16, no. 6 (2021): 1999-2011.

28 Kaile Zhou, and Yiwen Li. "Carbon finance and carbon market in China: Progress and challenges." Journal of Cleaner Production 214 (2019): 536-549.

29 Alexandre Kossoy, and Philippe Ambrosi. "State and trends of the carbon market 2010." (2010).

[30] M. A, Khwaja SDPI.

31 Mohammad Aslam Khan, Jawed Ali Khan, Zulfiqar Ali, Imran Ahmad, and Muhammad Nauman Ahmad. "The challenge of climate change and policy response in Pakistan." Environmental Earth Sciences 75 (2016): 1-16.

32 Sadia Malik, Maha Qasim, and Hasan Saeed. Green finance in Pakistan: Barriers and solutions. No. 880. ADBI Working Paper, 2018.

33 Dal Didia. "Debt-for-nature swaps, market imperfections, and policy failures as determinants of sustainable development and environmental quality." Journal of Economic Issues 35, no. 2 (2001): 477-486.

34 Z. Imaran, (2023, February 10). The "press and pulse" of climate change strains farmers in Pakistan. Thebulletin.org. https://thebulletin.org/2023/02/the-press-and-pulse-of-climate-change-strains-farmers-in-pakistan/

35 Maha Qasim, , and Noor Fatima. 2024. Review of Debt-For-Nature Swaps. Dawn. news. Dawn. February 10, 2024. https://www.dawn.com/news/1812956.

36 Saim Saeed, and Khurram Siddiqui. n.d. Review of Pakistan's Foreign Debts. The Express Tribune. The Express Tribune. Accessed 2014. http://labs1.tribune.com.pk/the-express-tribune-explains-foreign-debt/.

37Muhammad Mumtaz. "The National Climate Change Policy of Pakistan: An evaluation of its impact on institutional change." Earth Systems and Environment 2 (2018): 525-535.

40 Attique ur Rehman, and Gulpari Peerjan. "GREEN FINANCING FOR SUSTAINABLE DEVELOPMENT IN PAKISTAN." Journal of Research in Economics and Finance Management 1, no. 2 (2022): 31-40.