"The Impact of Climate Finance Flows on Renewable Energy Growth in Pakistan: Myth or Reality"

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Abstract

Climate finance has become one of the major global initiatives of assisting climate reduction and renewable energy transitions in the developing world. One of the countries that has been most susceptible to climate change is Pakistan that has been receiving growing amounts of climate related financial obligations in an attempt to facilitate the development of renewable energy. Although these have been the pledges, the rate of development of renewable energy in Pakistan has been quite low and this has cast doubt on the effectiveness of climate funding in generating practical energy transition outcomes.

The paper is a critical analysis of how climate finance flows can help develop renewable energy in Pakistan, especially the institutional, governance, policy, and technical aspects that can influence the usage of climate finance. The study will use the interpretivist research philosophy as it follows a qualitative research design that relies solely on secondary data. NVivo-assisted thematic analysis was used to subjectively analyse official donor reports, government policy documents, regulatory publications, and peer-reviewed academic literature. It is found that six significant themes could be distinguished in the analysis, including patterns of climate finance flows, institutional and governance barriers, policy and regulatory alignment, technical and capacity constraints, renewable energy growth outcomes, and overall effectiveness of climate finance mechanisms.

The results reveal that climate finance has been supportive in initiating and facilitating renewable energy projects in Pakistan, but its effectiveness is still limited by fragmented institutional structures, bureaucracies, irregularities in regulatory framework, limited technical capacity, and weak absorptive mechanisms. Moreover, the discrepancy between the priorities of donors and energy requirements of a country decreases the transformative capacity of climate finance. The paper concludes that climate finance in Pakistan is more of an enabling factor than a determining factor in the development of renewable energy. Strengthening institutional coordination, improving governance frameworks, enhancing technical capacity, upgrading grid infrastructure, and localising climate finance mechanisms are essential to improving outcomes. These findings contribute to the broader literature on climate finance effectiveness by offering context-specific qualitative insights and provide policy-relevant recommendations to support Pakistan’s renewable energy transition.

Keywords: Climate Finance, Renewable Energy, Institutional Barriers, Governance, Policy Alignment, NVivo Thematic Analysis, Pakistan

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CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Climate change is considered to be one of the major global problems in the 21st century, and its consequences are going to the least developed countries - those, which do not have enough financial and institutional resources to combat such environmental changes (World Health Organization, 2023).Pakistan is one of the most climate-susceptible countries globally that has always suffered disastrous floods, extended drought, soaring temperatures, glacial melting, and unreliable monsoon cycles (Hameed et al., 2025). These forces, caused by climatic conditions, not only affect everyday life but also harm the country's economic productivity, energy infrastructure, and agriculture. Never has the need to move towards a less fossil-fuel-reliant, more sustainable, and climate-resilient energy future been more urgent.Renewable energy, encompassing solar, wind, micro-hydro and biomass, provides an avenue for Pakistan to minimise dependence on imported fossil fuels, enhance energy security and reduce environmental degradation (Xin et al., 2022).

The process of switching to renewable energy, though, takes massive monetary input, technological improvement and political dedication. Third-world economies like Pakistan have a tendency to fail to raise the capital to develop mass renewable energy networks (Tauseef Aized et al., 2021). This economic cost has led to a global financial necessity: climate finance. Climate finance comprises international grants, concessional loans, technical assistance, and investments in climate mitigation and adaptation projects explicitly funded by the private sector. Global institutions like the Green Climate Fund (GCF), the Global Environment Facility (GEF), the Asian Development Bank (ADB) and the World Bank have the key role of guiding the flow of climate financing to those countries that require assistance to take the low-carbon development path.

Climate finance to Pakistan has increased over the past 10 years, with a large portion of this funding directed to renewable energy, policy reforms, and climate-resilient infrastructure (UN, 2024). Pakistan is supposed to be supported by climate finance to modernise its energy systems, increase the number of clean energy sources, and improve institutional frameworks. However, with this inflow, the development of renewable energy has been considerably slower than it should.

Pakistan has also set high-energy targets, including generating 30 per cent of renewable electricity by 2030, yet the proportion of renewable energy remains far below the intended target (Romanello et al., 2021). The nation still has a strong dependency on fossil fuels, especially the imported oil and liquefied natural gas and this exposes the economy to price volatility, foreign exchange stresses, and long term financial risk.

Climate finance is supposed to alleviate the economic burden and hasten the process of energy transition, but even though numerous observers have been impressed by the disbursed funds, they claim that Pakistan has failed to use the funds available efficiently. The efficient utilization of the renewable energy projects is usually hampered by institutional inefficiencies, poor governance systems, lack of technical know-how and bureaucratic delays. Additionally, the real effect of climate finance on renewable energy development has not been explored enough since most of the literature

currently portrays financial commitments and not the actual outcomes of the projects. It produce doubt, whether climate finance evaluated the progress or not. To know whether climate finance has brought anything of significance to the renewable energy sector in Pakistan, one has to go beyond the numbers of financial flows and explore such qualitative aspects as policy alignment, institutional performance, bottlenecks of implementation and quality of governance. The paper hence assumes a qualitative approach with NVivo to examine the secondary data in the form of government policies, donor reports, climate fund reviews, and academic literature. This analysis will help the research look into the extent of the impact of climate finance on the development of renewable energy and whether the perceived gains are commensurate with the real gains.

1.2 Problem Statement

Despite the heavy climate funds that have been granted to clean energy projects in Pakistan, the development of renewable energy in the country is still slow when compared to the amount of funds. Over a period of 10 years, Pakistan has shown intentions to switch to renewable energy and many policies have been presented towards achieving this goal (Sadiqa et al., 2021). These are the Alternative Energy Policy of 2019, renewable energy policies of NEPRA, and Pakistan Climate Change Act of 2017. Despite such a policy environment and access to international climate financing, the implementation of renewable energy has not been fast enough to meet national targets or international climate commitments.

The essence of the issue is between the inflows of climate finance and the observable outcomes of renewable energy. Superficially, there have been regular reports of growing climate-related funding for Pakistan. Nevertheless, there are fluctuating, lagging or dismal additions of renewable energy capacity. The underperformance of the renewable energy sector continues to raise concerns about whether climate finance is working and achieving the objectives of supporting the energy transition in Pakistan, or whether structural barriers are overriding the intended effects of the financial flows.

The operational weaknesses in the institutions, inconsistencies in governance, regulatory uncertainties, financial risks, and technological constraints all hinder the process of the nation transferring climate finance into the functional renewable energy facilities. There are a lot of projects of long-term approval, court cases, capacity issues, or institutional division, which hinder climate finance from generating real outcomes. Consequently, it is hardly clear whether climate finance acts as an energy-transition catalyst or is, to a significant degree, symbolic rather than transformative. It is further worsened by the lack of specific qualitative research evaluating the absorption, management, and utilisation of climate finance within Pakistan's institutional systems. The current literature consists mainly of quantitative designs investigating how finance and energy production correlate. However, it fails to recognize the less obvious governance, policy, and institutional relationships that influence development that is mainly driven by financial flows. Therefore, a qualitative study is needed to find out if climate finance funds have contributed significantly to the renewable energy sector of Pakistan or if the impact of such funds is still being overstated.

In this study, impact is defined in a qualitative and institutional sense rather than as a statistically measurable causal effect. It is with respect to the conversion of climate finance flows into renewable energy outcomes in terms of the governance, institutional capacity and implementation processes.

1.3 Aim of the Study

The main objective of this study is to critically discuss the importance of climate finance flows in facilitating the renewable energy development in Pakistan with reference to institutional, governance and policy-related issues that determine the efficiency of such finance.

1.4 Research Objectives

- To analyze the origins, trends, and tendencies of climate finance channeled into the projects of renewable energy in Pakistan.
- To investigate the shift in renewable energy development and inflows in climate financing.
- To determine the existence of institutional, financial and technical constraints that limit the successful use of climate finance.
- To determine whether climate finance has been a facilitating process in the development of renewable energy or whether it has been constrained by structural factors.

1.5 Research Questions

1. In recent years, what have been the patterns and sources of climate financing in Pakistan that have been channeled to the development of renewable energy in Pakistan?
2. What has been the development of renewable energy with the inflows of climate finance as indicated by policy and donor reviews?
3. How has climate finance helped the renewable energy projects in Pakistan?
4. What are the institutional, governance, and technical obstacles to effective climate finance to support the use of renewable energy?

1.6 Significance of the Study

This is a rather important study due to several reasons. Academically, it offers a significant portion to the general discourse of climate finance efficiency, a shift to renewable energy, and funding of development in the low-income states. Majority of the available literature adopt a strictly quantitative approach to the financial data but the article identifies that the association among financing, institutional realities, and institution structures has not been examined qualitatively. This study fills this gap by using thematic analysis through NVivo to investigate the association between climate finance and the development of renewable energy.

The findings will act as a guide at the policy level whereby the planning and execution of the renewable energy plans should involve the government agencies. The research highlights the success of the available policies, the loopholes that cannot be addressed, and the institutional factors that

cannot allow the country to enjoy the full potential of climate finance. The policy makers will get some indications on how governance reforms, better coordination, and regulatory transparency might increase the effects of financial flows.

To the foreign donors and development partners, the study offers them insight as to whether their financial assistance is in tandem with the national priorities and if they are generating the desired results. It brings into focus the aspects of effectiveness of aid, the selection of projects, the delays and implementation of the project and absorptive capacity which are important in ensuring the improvement of the assistance systems in future. Stakeholders in the energy sector like investors, the developers of renewable energy and the individual companies can also use the knowledge of the barriers and opportunities of climate-financed renewable project in Pakistan.

1.7 Scope of the Study

The research is confined only to the implementation of renewable energy and climate finance flows in Pakistan. The time period provided is from 2019 to 2024, which allows for the analysis of longterm trends. The study has excluded the fossil fuel energy activities. While the paper depends on global climate finance models, it remains concentrated on the country's (Pakistan) status. There are no primary interviews in the study, and it is based solely on secondary documentation, which can be a constraint on the project's internal knowledge. However, this method provides a reliable and quantifiable basis for assessing the extent to which climate finance supports renewable energy development.

1.8 Structure of the Thesis

The thesis is divided into five chapters. The first chapter is the introduction, which gives the context, problem statement, aim, objectives, research questions, significance, methodology overview and scope. The second chapter provides a detailed literature review of climate finance, renewable energy policies, aid effectiveness, and the theoretical framework in support of the study. The Three Chapter provides a detailed description of the research methodology, the qualitative research design, the method used to collect data, data coding structure in NVivo, the framework and the consideration of ethics. Chapter Four provides the results of NVivo analysis and explains them in relation to the literature. Chapter Five is the final chapter of the study, summarising major insights of the survey, making recommendations and providing future research areas

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter has the objective of reviewing the available academic, institutional, and policy literature regarding climate finance, renewable energy development, and the changing energy transition in Pakistan. The amount of literature on climate finance and renewable energy has grown substantially over the past twenty years as the global climate vulnerability has increased. There is an increasing trend among the world community that financial resources, both national and international, can be of great importance in enabling low-carbon transitions, particularly in developing countries with a low fiscal means. Pakistan is one of the most critical examples because of the high exposure to climatic conditions, the energy insecurity situation, the extreme dependence on foreign fossil resources, and the unstable policy frameworks. Although Pakistan still enjoys climate finance through several international mechanisms, the degree at which the financial flows have been converted into any tangible increase in renewable energy is under research.

This chapter examines international and national views of climate finance, studies the direction of renewable energy development in Pakistan, and assesses institutional and governance aspects that contribute to the adoption and successful performance of climate finance. The chapter has a thematic structure which includes conceptual arguments, global financing systems, developing country challenge, climatic policy and energy systems in Pakistan, renewable energy trends, and obstacles that define the use of climate finance. A theoretical framework based on the institutional barriers theory, financial flow theory and market dynamics theory are also considered, and the existing gaps are also synthesized. These gaps warrant the existence of the given study which is conducted with the help of NVivo to perform qualitative analysis of secondary data to evaluate whether climate finance has yielded any real results in the renewable energy sector in Pakistan.

2.2 Conceptualising Climate Finance

Climate finance are financial flows or transfers that are local, national or transnational in nature and are used in climate change mitigation and adaptation as stipulated in the United

Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC Standing Committee on Finance (2022) defines climate finance as grants, concessional loans, guarantees, equity, and private investments meant to mitigate greenhouse gas emissions, increase the use of renewable energy, improve climate resilience, and the overall adaptive capacity. Climate finance became formally recognised under the Copenhagen Accord in 2009 with developed countries pledging to mobilise USD 100 billion a year to the developing countries, which was reiterated in the Paris Accord of 2015 (OECD, 2022).

Climate finance is considered by global literature as one of the pillars of sustainable development. According to Giglio et al. (2021), climate finance is necessary as an irreplaceable tool when it comes to facilitating energy transitions and mass roll-out of renewable energy sources, since clean technologies are costly to start-up. In the same vein, Li et al. (2022) notes that most developing economies can not even implement climate policies, and meet climate emission reduction goals,

without proper climate finance. Climate finance, according to scholars, should be predictable, transparent, and available to be effective.

Another area that is the focus of the conceptual debate is the distinction between the public and private climate finance. Public finance is commonly used to subsidise projects, mitigate investment risks and enable the environment of the private investors (Gatti, 2023). Instead, large-scale deployment is considered to be propelled by the engine called private climate finance. Yet, other researchers, such as Mr. Ananthakrishnan Prasad et al. (2022), also note that it is difficult to quantify the impact of the private climate finance precisely because it is hard to trace the investments of a particular company in different countries and industries. Also, political instability, perceived risk of investment, and underdeveloped financial markets are challenges to many developing countries to attract the private climate finance.

Climate finance is thus at the confluence of environmental regulating, developmental economics, finance, and energy policy. This conceptual basis is critical to the investigation of the effects of climate finance on renewable energy development in Pakistan, a nation, in which institutional issues have a strong influence on financial flows and project performance.

2.3 Global Climate Finance Mechanisms and Access Criteria

2.3.1 Multilateral Climate Finance Mechanisms

The multilateral institutions lie at the heart of the global climate finance structure and are used to offer financial support to the developing nations that want to pursue low-carbon development pathways. The largest climate fund under UNFCCC is the Green Climate Fund (GCF) which provides grants, concessional loans, equity, and guarantees to mitigation and adaptation projects (Kalinowski, 2023). The GCF stipulates that the countries have to collaborate via approved national or global organizations and show climate rationality, environmental protection, and compatibility of the project with the state climate plans (GCF, 2020). Such strict demands increase accountability yet tend to impose a barrier to access to countries that have low technical capacity.

Another relevant multilateral mechanism is the Global Environment Facility (GEF) which promotes renewable energy, energy efficiency and policy reform. The activities that are frequently funded by the GEF include feasibility studies, capacity building, pilot projects, and they have been used to ensure a foundation to the large scale investment in energy (Omar, 2025). Nevertheless, to use GEF finance, countries have to coordinate with implementing organizations such as UNDP or World Bank and this introduces administrative burdens to those countries with poor institutional mechanisms.

MDBs such as the World Bank and Asian Development Bank (ADB) also have a key role in delivering climate finance in the form of concessional loans and blended finance vehicles. The Climate Investment Funds (CIF) of the World Bank, and most notably the Clean Technology Fund, have funded projects on renewable energy in countries such as Morocco, South Africa and Chile.

These organizations offer volume funding needed to cover grid infrastructure and renewable energy rollout yet admission to them is limited by high procurement, fiduciary, and governance requirements, which most developing nations cannot satisfy (Hyun, 2025).

2.3.2 Bilateral Climate Finance and Donor Priorities

Climate finance is also given bilaterally by the governments of developed countries including Germany, Japan, the United Kingdom, and the United States. These funds usually sponsor renewable energy technologies, capacity building, reforms in climate governance and development in infrastructure. Direct flows can be more expeditious and adaptable than multilateral streams, but often come under the impact of the geopolitical interests and strategic priorities of donors (Masud et al., 2023). This can lead to inappropriate funding decisions that do not cover the long term energy requirements of the recipient country. In the case of Pakistan, the donors which include the KfW of Germany, JICA of Japan, and the USAID have funded renewable energy and grid modernisation projects. Nonetheless, the interventions may be disjointed as different donors may not coordinate with each other thus creating overlapping project agendas.

2.3.3 Private Sector Finance and Blended Finance Models

The involvement of the private sector in financing the global climate is significant particularly in the infrastructure of the renewable energy. A study conducted byAdhikari and Safaee Chalkasra (2021) shows that private investments are the key to scaling up clean energy projects because the public money is not enough to achieve the global mitigation goals. The problem is that, however, regulatory uncertainty, political risks, currency instability, and weak financial markets tend to limit the extent of private investment in developing countries (Ma et al., 2024). Blended finance: the application of public concessional funds has come out as a major way of attracting private capital. However, its success will largely be determined by the good domestic institutions and stable policy environments, which has been a challenge in most developing economies including Pakistan.

2.3.4 Structural Challenges for Developing Countries and Implications for Pakistan

There are structural problems which developing countries have in accessing and using climate finance such as inadequate institutional capacity, bureaucratic delay, fragmented governance and absence of trained staff to prepare and report projects (Ricci & Maryline Mangenot, 2023). The political instability also leads to a lack of confidence in donors that helps to slow down the disbursement and tighten controls (Mai et al., 2023). The capacity to effectively use funds which is known as absorptive capacity is one of the biggest impediments in South Asia as well as sub-Saharan Africa. These international issues are more than directly applicable to Pakistan. The country is facing challenges in fulfilling procedure and monitoring demands of principal climate funds, thrives on foreign intermediaries, and does not have specific institutional arrangements to smooth access to climate funds. Consequently, even after Pakistan is given commitment by multilateral and bilateral donors, then projects are usually delayed in implementation and there is usually a low rate of disbursements. Such global processes and issues should be understood to assess whether climate finance is really promoting the development of renewable energy in Pakistan being one of the key questions of this study (IMF, 2024).

2.4 Climate Finance Trends in Developing Countries

2.4.1 Rising Climate Finance Needs and Global Funding Gaps

Developing countries are some of the most climate exposed environments and the ones that have the least financial ability to finance their own low-carbon transitions. The literature on climate finance flows across the globe constantly underscores that the flows are still way short of the quantity demanded by developing nations to achieve climate mitigation and climate adaptation targets. According to the estimates of the Ananthakrishnan et al. (2023), developing economy countries should spend more than one trillion dollars per year to switch to clean energy systems but current climate finance flows are much less than that level. Regardless of growing political promises, mobilisation of funds of USD 100 billion annual commitment has not been actualised, and it has resulted in a constant shortfall between demands and supply. This imbalance indicates larger gaps in global climate accountability and financial strength to exacerbate the threat of unequal climatic results in various areas.

2.4.2 Access Barriers and Institutional Capacity Challenges

Another theme that may be seen in the literature is that developing countries have difficulties in accessing climate finance because of institutional limitations. Tapping into funds offered through schemes like Green Climate Fund or Global Environment Facility will demand well-developed project preparation skills, accredited country agencies, environmental protection, and viable monitoring systems.

According to Goldin (2020), most developing economies do not have the expertise specialised to achieve these demands and hence, proposals are postponed and turned down. In some cases like South Asia and sub-Saharan Africa, lack of well developed climate finance units in government ministries also inhibits the mobilisation of funds. External consultants are often needed in project documentation, feasibility studies and impact assessment adding to the costs and dependency on foreign intermediaries. These restrictions minimize shareholding, institutional knowledge and sluggish execution of projects.

2.4.3 Policy and Governance Constraint

The effectiveness of climate finance in the developing world is directly connected with the level of governance and policy consistency. Renewable energy investments are often sabotaged by inconsistent regulatory frameworks, inability to enforce them, political unrest and inefficiencies within the energy sector (Baker et al., 2021). Governance deficiencies lower the trust of the donors, leading to harsher control and longer durations of approval to climate-financed projects. Moreover, the constant policy shifts or ambiguous tariff regimes demoralize private investors, as they are a major segment of climate finance mobilisation. This has led to the fact that climate finance is either under-utilised or it is issued in a dispersed manner that restricts its ability to significantly transform the energy sector. In most countries, policies on renewable energy are not sustained in the long-term, which makes them uncertain, thus unattractive to both the population and industries.

2.4.4 Limited Domestic Financial Markets and Investment Risks

The financial markets of developing countries are usually underdeveloped, limiting their capacity to attract the large-scale foreign climate funding (Liu & Paan, 2024). The renewable energy projects in these areas are viewed by commercial banks as being high-risk because of unfamiliar technologies, long payback periods, and a lack of collateral. According to Prizzon (2025), concessional finance is necessary to minimize perceived risks, which, however, is not always enough to finance a project. Huge interest rates, currency volatility and macro-economic instability discourages the private investors even more. These are the risk factors that further deprive the developing countries of selffinance and blended finance tools. But, blended finance can only work on the basis of effective domestic institutions, which most of the countries do not have. As a result, the private sector is not committed enough to climate-related investments, which makes the efforts of mitigation efforts smaller.

2.4.5 Relevance of Global Trends for Pakistan

The issues outlined in developing nations are very close to what Pakistan is going through. The barriers to project preparations in Pakistan, governance challenges, no consistent energy policy, and low engagement of the private sector by it are hindrances to its capacity to maximize the use of climate finance (Asim Khan & Israr Ahmed, 2025). The fact that the issues of absorptive capacity and political instability restrict the speed at which climate-financed renewable energy projects transition to implementation makes the problem even worse.

These larger regional and global trends can offer a valuable point of departure in examining the climate finance situation in Pakistan and to assess the success or failure of financial flows in contributing to the overall development of renewable energy, which is the focal point of this study.

2.5 Pakistan's Climate Vulnerability and Energy Transition Context

2.5.1 Pakistan's Extreme Climate Vulnerability

Pakistan has always been categorized as one of the most climate sensitive countries in the world and it has become a regular occurrence to face severe flooding, droughts, heat waves as well as glacial meltdowns. Pakistan is ranked among the top ten countries that have been affected by global climate change over the last two decades (Abubakar, 2025), which indicates the magnitude of the losses caused by climate impact. The 2022 flood that left the country with over USD 30 billion of economic damage (World Bank Group, 2021) proved how dependent the climate resilience systems in Pakistan are and showed significant gaps in the adaptation planning. Glaciers melting (especially in the Himalayas) and temperature increases contribute to the further danger of water shortage, disruption of agriculture and destruction of infrastructure. Such climate effects require quick change of the energy and environmental systems in Pakistan especially as the nation advances towards carboncutting targets as per the global climate pacts.

2.5.2 Interlinkages Between Climate Vulnerability and Energy Insecurity

Pakistan is highly vulnerable to climate change which is directly associated with the persistent energy insecurity in the country. The imported fossil fuels such as furnace oil, LNG, and coal are heavily relied upon in the national energy system and put the economy at the risk of fluctuations in world fuel markets and foreign exchange pressures. Fossil fuel contributes over 60 percent of the electricity in Pakistan (Saeed, 2024), which worsens the environmental degradation and economic vulnerability. The failure of power generation and power transmission systems during extreme weather emergencies may be caused by the age of infrastructure and the lack of investment in resilience technologies. The increasing demand-supply gap, the high circular debt, and the financial instability in the energy sector present more problems to long-term planning. The interdependence of these vulnerabilities highlights the importance of the immediate necessity to have clean, affordable, and resilient energy sources that minimize monetary and environmental risk.

2.5.3 Renewable Energy Potential and the Policy Landscape

Pakistan has a vast source of renewable energy. The solar irradiation of the country is among the highest in the region, whereas the Gharo-Jhimpir wind corridor has an estimated potential of more than 50,000 MW (Pervez & Ammar Oad, 2023). In spite of this possibility, development of renewable energy has been slow because of inconsistencies in policies, regulatory barriers and low investor trust. The last ten years have seen a number of national policies such as the Alternative Energy Policy (2019), the National Renewable Energy Policy (2020), and the revision of the National Climate Change Policy (2021) aimed to increase the use of renewable energy and reach a goal of 30 percent of renewable energy by 2030. The administrative delays, fragmentation of governance and switching of the tariff regimes have limited implementation though this has added uncertainty in the renewable energy market. Researchers, includingMcKenna et al. (2025), believe that mixed policy cues have deterring investments and reduced solar and wind systems development.

2.5.4 Need for Climate Finance to Support Energy Transition

The financial capacity of Pakistan to support the large scale renewable energy projects is limited by the fiscal constraints in the country. Climate finance is thus important in helping to fill financial gaps and facilitate the low-carbon energy system transition. The inflows of international donors like the Green Climate Fund, Asian development bank, and world bank have pumped much money to renewable energy and climate resilience projects in Pakistan yet the success of the inflows is heavily dependent on institutional capacity. According to Javed (2025), with the allocation of climate-related funds, Pakistan is not able to comply with strict reporting, monitoring and co-financing conditions and is therefore sluggish in terms of disbursement and lower rates. The transformational potential of these financial resources is compromised by weak project-preparation capacity, underdeveloped climate finance institutions, and governance constriction. Therefore, the effectiveness of the country in the efficient use of climate finance is one of the major determinants of renewable energy development in the future.

2.6 Pakistan's Renewable Energy Sector: Growth, Markets, and Outcomes

2.6.1 Evolution of Renewable Energy Development in Pakistan

The development of renewable energy in Pakistan has gone through different cycles of rise, stasis and policy-based changes in the last 20 years (Kamran, 2020). Initial developments started in the mid-2000s with the formulation of the Alternative Energy Development Board (AEDB) whose mission was to diversify the energy mix of the country. The major growth was experienced between 2013 and 2016 when Pakistan opened several possibilities to private-sector investment due to the feed-in tariffs and an enabling environment (2025). At this time, there have been wind projects in the Gharo-Jhimpir corridor and solar projects like the Quaid-e-Azam Solar Park. The pace, however, declined over the following years because of the shift in policy priorities, restructuring of tariffs, and the increasing doubts about long-term energy planning.

2.6.2 Sectoral Composition and Market Characteristics

The market of renewable energy in Pakistan is dominated by wind, solar energy, and hydropower systems with biomass and biogas having a little presence (Baloch et al., 2019). The Sindh wind corridor has been the most successful area where wind power has been developed and a number of utility-scale wind farms have been established by local and foreign investors (Ahmed et al., 2019). The development of solar energy has increased at a high pace since Pakistan has a great amount of solar irradiation at its disposal, but there is still an unequal distribution of deployment of solar power across the provinces. Solar parks are currently co-located with small-scale rooftop systems, but policy and net-metering challenges have limited their proliferation (Asif et al., 2025).

The single largest source to the renewable energy mix is still hydropower, however numerous hydropower projects have environmental issues, land ownership issues, and have stretched-out timelines of development. Hydropower, despite being counted in the category of renewable energy, has a significant impact on the environment and infrastructure and presents socio-environmental impacts that are not the same as those of wind or solar technologies (Sibtain et al., 2021). The general outlay of Pakistan renewable energy market is determined by the prevalence of state-run bodies, the tentative participation of the private investors and regulatory challenges that dominate the market dynamics.

2.6.3 Policy Influence on Renewable Energy Growth

Renewable energy policies have a core influence on the course of renewable energy. In Pakistan, a number of frameworks have been introduced, such as the Alternative Energy Policy of 2019, which targets 30 percent of renewable energy by 2030, and the changing regulatory framework of independent power producers provided by NEPRA (Ali et al., 2022). Despite the clearly stated objectives in these policies, their implementation has not been consistent leading to a weakened effectiveness. According to scholars like Boer and Rieth (2024), the fact that policies are changed frequently, the tariff mechanisms are not clear, and there are delays in the bureaucracy make such a system doubtful to the investors. The shifting nature of government priorities and absence of

strategic planning in the long run has helped to cause swings in the number of projects granted and unfixed construction of pipelines.

In addition, the recent developments in Pakistan have influenced the growth of renewable energy development because of the circular debt crisis in the country, undermining confidence in the financial health of the power sector (IGC, 2020). The failure of the distribution companies to collect revenue at the right time leads to liquidity shortage which impacts on payments to renewable energy producers. This financial insecurity deters new participants and makes the process of increasing the deployment of renewable energy harder.

2.6.4 Operational and Infrastructure Challenges

There are also critical operational and technical obstacles in the renewable energy sector of Pakistan. One of the biggest constraints is the inefficiency of the national grid to accommodate variable renewable energy sources successfully. The efficiency and reliability of the operations of renewable energy are diminished by transmission bottlenecks, insufficient forecasting systems, and obsolete infrastructure (Yeboah et al., 2025). Renewable energy projects have been reduced on a number of occasions because of unavailability of the grid or the instability of networks leading to investors and stakeholders incurring losses (Ejuh Che et al., 2025). There is also the limitation of institutional capacity to deal with renewable energy technologies. There is still the lack of specialised engineers, technicians and regulatory personnel that have expertise in renewable technologies. The technical training and research centers have failed to keep up with the demands of a fast changing energy sector that limits innovation and ability to solve the problems locally. This is because the transformative potential of renewable energy is limited by these operational challenges even when there are financial resources.

2.6.5 Implications for Climate Finance Effectiveness

Climate finance directly depends on the structure, challenges, and performance of the renewable energy sector in Pakistan. Under even those conditions, when the financing of climate change is introduced to the country, the technological aspect, inconsistency of policies, and the weaknesses of the institutions may hinder its transformation into meaningful results in terms of renewable energy. This therefore calls for examining the past of the sector and the actual operational world that to be able to figure out if climate finance is making a real difference or if the impacts are limited by the systemic bottlenecks.

2.7 Climate Finance Inflows to Pakistan: Sources, Trends, and Utilisation

2.7.1 Overview of Climate Finance Commitments to Pakistan

The concern regarding climate finance has escalated to become a major contributor of funds for climate mitigation and adaptation projects in Pakistan, mainly in the energy sector (IGC, 2022). Some of the international mechanisms that have provided Pakistan with funds to address climate change include the Green Climate Fund, Global Environment, and Climate Investment Funds by the World Bank, and climate financing windows offered by the Asian Development Bank. According to UNDP (2021), Pakistan has gotten climate-related pledges worth between USD 800 million to USD

1.2 billion in the past ten years (Khan, 2024). These flows consist of mitigation projects like renewable energy projects and adaptation projects that focus on agriculture, water management, and disaster resilience. Nevertheless, payment of these funds has not been in accordance with the promises that have been given and renewable energy has been given less than the amount of total climate finance allocated to Pakistan.

2.7.2 Sources of Climate Finance for Renewable Energy Development

Several bilateral and multilateral donors have helped Pakistan in its renewable energy sector. The Green Climate Fund has been used to fund programs which are expected to scale up the penetration of renewable energy as well as increased grid stability. The Asian Development Bank has been very central in the form of long-term loans, technical assistance, and upgrading the transmission systems that indirectly assist in the support of renewable projects (Millison, 2024). The Clean Technology Fund of the World Bank has helped in the development of solar energy and wind energy within the wider energy reform programmes. KfW, the bilateral donor of Germany, and Japan, the JICA have provided grants and concessional funds towards renewable energy and energy-saving projects. All these sources represent a wide range of funding environment, however, they also cause issues with coordination, reporting, and long term planning.

2.7.3 Trends in Climate Finance Disbursement and Project Implementation

Despite Pakistan being a country with big climate finance commitments, in fact disbursements have often fallen behind. Delay in disbursement is credited to time consuming approval process, redesigning of projects and the low ability of Pakistan to meet the demands of the donor. According to Eaglen (2025), despite the seemingly large sum of money being financed under commitments, project level disbursements are frequently lower by a large margin because of factors like unfinished feasibility studies, lack of compliance in safeguards, and procurement bottlenecks. Slowdisbursement impedes the implementation of renewable energy projects and adds to the cost of the project and reduces the ability of climate-financed projects to scale.

In addition, the climate finance inflows to Pakistan seem to be disjointed into institutions and sectors. There is no integrated climate finance monitoring system that would make project monitoring more difficult and less transparent. The Adnan et al. (2024) notes that Pakistan does not have a centralised way of monitoring climate-related expenditures, which leads to discrepancies between the published statistics and the real financial resources. This disintegration undermines the capacity of Pakistan to show outcomes, as well as accountability on climate finance use.

2.7.4 Institutional and Governance Barriers to Effective Utilisation

Weaknesses at an institutional level are a major problem to effective use of climate finance in Pakistan. The overlapping of the mandates of the Ministry of Climate Change, the Ministry of Energy, NEPRA and the Alternative Energy Development Board confuses the roles and responsibility of the different institutions. This decentralized system of governance slows down the process of approving projects and coordination between the governmental agencies. As stressed by Nazar and Abbas (2025), the management of the renewable energy projects funded by the

international mechanisms is crippled by administrative inefficiency, low technical know-how, and poor monitoring systems.

The problem of governance such as political unrest and bureaucratic slackness also makes Pakistan less effective in implementing climate-financed projects. The World Bank (2020) also emphasizes that the challenges in the governance of the energy sector in Pakistan, especially associated with the circular debt, procurement transparency, tend to affect the decisions of the donor and make the implementation arrangements more difficult (Malik, 2020). Additional monitoring layers are often demanded by donors as a way of reducing governance risks, having the effect of overloading national institutions with administration costs.

2.7.5 Implications for Renewable Energy Outcomes

The implications of the trends and challenges related to the climate finance inflows on the renewable energy development in Pakistan are immense. Though international support is reflected in financing commitments, the rate at which this disbursement is given out is slow and the institution lacks the effectiveness in giving this disbursement, institutional fragmentation and weak governance slows down the rate of disbursement in the deployment of renewable energy. The limitations pose uncertainty on the investors, slow down the construction process, and minimize the transformative effect that climate finance is likely to deliver. Knowledge of such patterns in funding is important in assessing whether climate finance has been a real boost in terms of growing renewable energy or whether its potential has not been fully actualized owing to the existence of systemic obstacles.

2.8 Barriers Affecting Climate Finance and Renewable Energy Integration

2.8.1 Institutional Fragmentation and Governance Weaknesses

One of the most common barriers that have been mentioned to influence the implementation of climate finance in the Pakistani renewable energy sector is institutional fragmentation.

Several government organizations such as the Ministry of Climate Change, the Ministry of Energy, Alternative Energy Development Board, and the National Electric Power Regulatory Authority overlap in terms of climate and energy regulation. This decentralization of responsibility results in confusion and procrastination of decisions. Khaled et al. (2024) stress that disjointed institutional frameworks lead to the absence of coordination, the complexity of adhering to the requirements of the donor, and the inability to approve renewable energy initiatives. These problems are aggravated by poor governance, including sluggish bureaucracies, lack of accountability, and politics, among others. According to Gotsadze et al. (2019), the ongoing problems in governance only deter the confidence of donors and, in most cases, cause a tightening or reconsideration of funding agreements.

2.8.2 Financial Constraints and Market Risks

The Pakistani climate finance potential is seriously constrained by the financial barrier. Renewable energy initiatives tend to have high initial capital and even the domestic banks hesitate to finance these technologies because of not understanding the project structure, not being certain of the sources of income and also they fear the stability of the long-term policies. As observed by Aqeeq et al. (2023), investors in Pakistan consider renewable energy projects to be very risky, mostly due to

unpredictability in the tariff policy and pressure of currency devaluation. There is an existent debt crisis in the form of circles that have been developing because of the inefficiencies in billing, distribution losses, and delays in payment to power producers, which makes this situation even less predictable.

As the Hafeez (2019) notes, the creation of circular debt undermines the creditworthiness and creditworthiness of the entities of the power sector, and renewable developers can hardly find financing or even conclude long-term purchasing agreements. Such financial restrictions minimize the mobilisation of the private capital by climate finance, which narrows the overall effect on the growth of renewable energy.

2.8.3 Technical Limitations and Grid Integration Challenges

There are also technical barriers to the adoption of renewable energy in the Pakistan power system. The national grid is not sufficiently capacity-built to receive high volumes of variable renewable energy particularly solar and wind energy. High system losses, obsolete infrastructure and bottlenecks in the transmission system compromise effective delivery of renewable energy to consumers.

According to the Ibrahim and Zainudin Awang (2025), the lack of sufficient grid capacity resulted in the fact that the renewable power is curtailed, making the projects less appealing and less financially feasible. Additionally, Pakistan does not have sophisticated forecasting infrastructure, demandresponse infrastructure and modern grid technologies that are necessary in variability management.

The sector is also limited in its performance in the long term as a result of limited technical knowledge in renewable energy engineering, operation, and maintenance. It is only with a significant investment in grid modernisation and capacity-building that the transformative effects of climate finance will be substantial.

2.8.4 Administrative and Procedural Delays in Project Approvals

Inefficiencies in administration have also been major factors in sluggishness in implementing climate-finance renewable energy projects. The delays in approval cycles, ambiguity in documentation requirements and inconsistency in the implementation of policy guidelines pose a sense of uncertainty among developers. Sarwar et al. (2020) emphasizes that Pakistan is characterized by the lengthy delay between pre-preparation and financial closure due to the long rework to satisfy donor requirements when preparing the project.

There are additional project timelines problem because of procurement hurdles, environmental approval procedures and land acquisition disputes. These delays add to the costs of projects, decrease investor confidence, and reduce the likely advantages of concessional funding. It is demonstrated by

these procedure bottlenecks that climate finance commitments often fail to manifest into timely or effective deployment of renewable energy.

2.8.5 Implications for Climate Finance Effectiveness

Altogether, institutional, financial, technical, and administrative obstacles the Pakistani country is experiencing are a major impediment to climate finance effectiveness in promoting the development of renewable energy. Systemic weaknesses hindrance of funds into operational infrastructure even with high levels of financing. Lack of ability to solve governance problems, consolidate regulatory structures, and increase technical capacity inhibits the growth of the sector and restricts the achievement of national renewable energy goals.

All these obstacles indicate that the question of the volume of climate finance received by Pakistan is only part of the overall picture since the contextual aspects that define the success of its usage are also to be considered. The analysis is critical in comprehending whether climate finance has actually shown any real results in the renewable energy sector of Pakistan or whether it has been watered down by the structural barriers.

2.9 Governance, Aid Effectiveness and Implementation Realities

The climate finance can be measured on the aid effectiveness criterion. The Paris Declaration on Aid Effectiveness emphasises the principles of ownership, harmonisation, alignment, managing for results and mutual accountability. However, in Pakistan, the principles are often overlooked. The misalignment between donors and the system is a consequence of weak monitoring systems, unstable political situations and changing priorities of the country. In their paper, Sadaf et al. (2023) revealed that in Pakistan's energy sector, the issue of governance had been persistent which included mismanagement, political interference, and lack of accountability. These problems discourage donor trust and slow down the pace of project implementation. The Awan et al. (2024) also pointed that political concerns usually lead to the undermining of energy sector reforms which in turn increases the cost overruns and inefficiencies.

Climate finance projects are equally suffering from the issues of poor local participation. The majority of renewable energy projects are heavily reliant on foreign consultants which in turn reduces the ownership and capacity development locally (Omukuti et al., 2022). Moreover, climate finance may be routed through international intermediaries instead of local ones, thus, they become less efficient and less responsive to the needs of the local community.

After reviewing the literature, it is clear that climate finance aimed at promoting renewable energy in Pakistan is contingent on governance reforms, institutional strengthening, and the establishment of transparent systems.

2.10 Empirical Studies on Climate Finance and Renewable Energy Impact

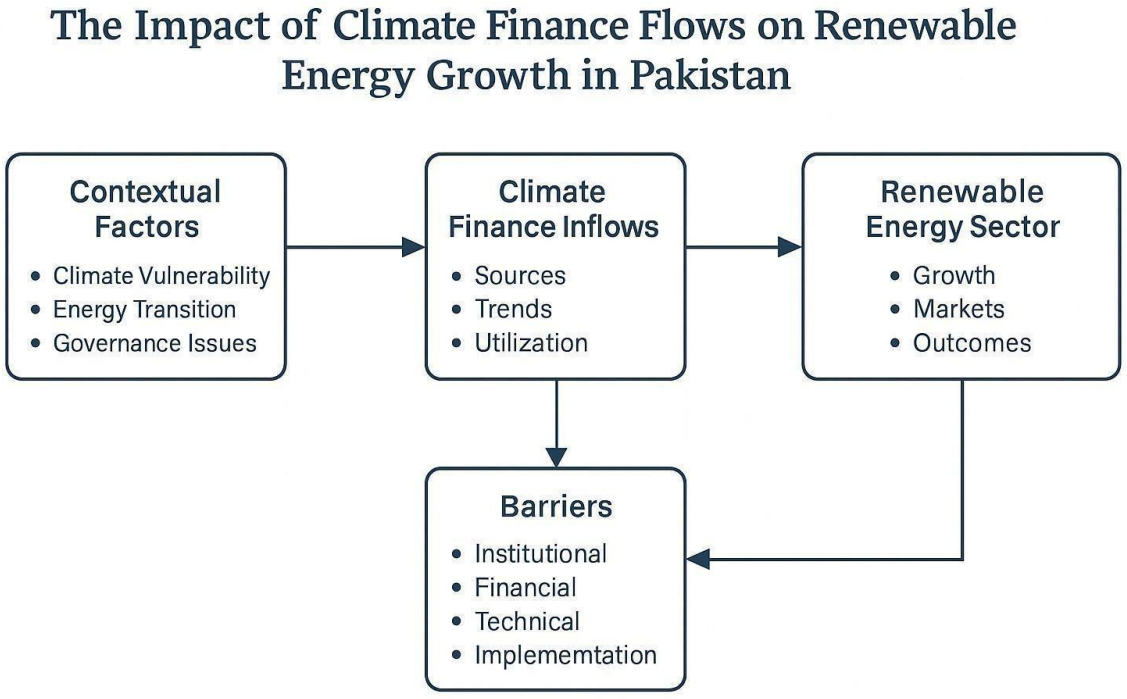
The sources that exhibits the impacts of climate finance on renewable energy are unresolved. Research in Africa, Latin America and Asia provides mixed results. As an illustration, Thibault Briera and Julien Lefèvre (2024) established that climate finance and renewable energy

implementation had a positive relationship in emerging economies. In their argument, however, Colgan et al. (2020) suggest that climate finance may be counterproductive due to institutional vices. In South Asia, the literature has shown that climate finance has an effect on the adoption of renewable energy but is strongly mediated by the quality of governance.

As an example, Hulio et al. (2022) claim that the lack of the institutional capacity in Pakistan decreases the success of the renewable energy projects funded by donors. All in all, empirical data shows that context-specific analysis is required to understand whether climate finance has brought any positive results in Pakistan.

2.11 Theoretical Framework

The institutional barriers theory, financial flow theory, and market dynamics theory are some of the theories used in this study based on the research proposal. The institutional barriers theory is used to describe those institutional barriers that hinder the use of climate finance through weak governing and fragmented institutions. The theory of financial flow focuses on how availability of capital, financial instruments, and risks associated with renewable energy can influence the development of renewable energy. Market dynamics theory is concerned with the climate of investment, policy stability as well as market structures.



All these frameworks can be used as a comprehensive prism through which to analyse the interactions of climate finance with the institutional, financial, and market environment in Pakistan.

2.12 Identified Gaps and Research Contribution

There are major gaps in the literature. Scarcely any qualitative study has been conducted to examine the way climate finance is being absorbed, handled and implemented in Pakistan. The majority of existing literature is quantitative, and it does not reflect the institutional intricacies. It also lacks NVivo-based thematic analysis of donor reports, government documents, and publications in the energy sector. Moreover, the research does not often challenge the fact that climate finance has yielded any tangible outcomes or its effect is merely a scam.

The above gaps are dealt with in this research where a qualitative investigation of the secondary literature is conducted in detail. This provides the description of the institutional, financial, and technical factors that are the primary determinants of the success of climate finance.

2.13 Summary

The chapter has critically reviewed the global and local literatures concerning climate finance and renewable energy. It was suggested that climate finance is one of the major facilitators of energy transitions, but the success of climate finance relies significantly on governance, institutional capacity, financial system, and policy coherence. Renewable energy industry in Pakistan is experiencing massive challenges that reduce the effects of climate finance. The literature identifies difficulties but does not analyze the qualitative aspects of climate finance in Pakistan, which is what this study will do.

Chapter 3: Methodology

3.1 Introduction

This chapter discusses the methods used in the study and provides reasons for the philosophical, strategic, and analytical decisions that have guided the research. The research aim was to investigate how the flows of climate finance affect the growth of renewable energy in Pakistan. As detailed in the earlier chapters, the shift to renewable energy in Pakistan would depend not only on the amount of climate finance the country is allotted but also on the capacity of the institutions, the policy environment, the dynamics of governance, and the mechanisms of absorption that, in the end, would convert such finance into tangible renewable energy results.

These factors are complex and intricately linked with the social, political, and administrative structures. Thus, the methodology chosen for this study had to be capable of interpreting complex narratives, evaluating policy evidence, and examining institutional trends. Hence, this chapter provides reasons for the use of a qualitative research approach solely relying on secondary data, supported by NVivo-driven thematic analysis, and based on an interpretivist philosophy.

The chapter also elaborates on the research design, approach, population, sampling techniques, data collection procedures, data analysis strategy, ethical issues consideration, quality assurance criteria, and limitations of the methodology. Each component reflects that the methodology is in line with the research questions and objectives discussed earlier and is compliant with the university thesis handbook.

3.2 Research Philosophy

The research philosophy portrays the general assumptions about the existence of reality and the ways to gain knowledge. The study investigates the institutional practices, governance frameworks, financial mechanisms, and socio-political factors influencing renewable energy and climate finance. Based on this, the interpretivist paradigm is the most appropriate one for this study. Interpretivism considers reality as a social construct that cannot be described by measurable or quantifiable indicators. It does not focus on numerical results or statistical relationships but rather on the interpretation of the meanings that are inherent in the texts and the behaviors of institutions. The results of climate finance cannot be explained only in financial or quantitative terms because the implementation of financial flows depends on the interaction with regulatory systems, administrative capabilities, political environments, and technological contexts.

The interaction is for interpretation, not for measurement. For instance, climate finance results in the reorganization of bureaucratic structures, gains or losses in governance, requirements imposed by donors, stability of policy, hurdles in implementation, and market reactions - all prevailing within socio-political narratives. These are institutional factors deeply intertwined with interpretivist thought and allowing the researcher to discover meanings, patterns, and interrelationships that show how climate finance leads to renewable energy development in Pakistan.

The ontology here assumes that the success of climate finance is not one objective, single reality but a socially constructed result of institutions, actors, and governance processes. From an

epistemological standpoint, knowledge about the effectiveness of climate finance comes from the interpretation of the textually based evidence such as policy documents, evaluation reports, governmental publications, and donor assessments. These resources will provide elaborated descriptions and insights that will help the researcher contextualize the financial inflows and renewable energy development.

Therefore, interpretivism is the explanation of the qualitative study through document analysis with a backup of the thematic coding and interpretation. Furthermore, this paradigm aligns with the theoretical concerns that will be described in Chapter 2 i.e., Institutional Barriers Theory, Financial Flow Theory, and Market Dynamics Theory since the theories strongly rely on the perception of the context and not on the empirical quantification only.

3.3 Research Design

The present study will utilize the qualitative research design that will solely work based on secondary data in evaluating whether climate finance is effective in promoting the development of renewable energy in Pakistan. Since climate finance mechanisms are institutional, governance, and policy-oriented, the qualitative analysis of the documents is especially suitable to reflect the complex administrative mechanisms, regulatory frameworks, and implementation realities that influence the project outcomes.

Interviews or surveys to collect primary data were not utilised because of constraints associated with access, time, as well as sensitivity of climate finance governance structure. Rather, the secondary sources of authority like donor evaluation reports, government etc should be relied upon.

Peer-reviewed literature, policy documents, and regulatory publications all- make it possible to conduct a thorough and authoritative analysis of institutional dynamics.

Thematic analysis with the use of NVivo makes certain systematizing coding, transparency, and analytical rigor. The proposed methodological approach will allow the study to produce detailed, context-sensitive knowledge, which will enhance the current quantitative research and add to the broader picture of the climate finance functioning in the context of the Pakistani renewable energy industry.

3.4 Research Approach

The research approach is the explanation of the research method used in the study. The present study uses an inductive approach as it will infer from the analysis of the documents rather than from the hypotheses that are already set. Inductive reasoning is a process of deriving generalization from the specific observation. In this situation, the researcher goes through various documents of climate finance, policy implementation, renewable energy projects, and donor assessments to find the patterns, themes, and relationships corresponding to the research questions.

This study is suitable for inductive reasoning as its goal is to comprehend the contribution of climate finance to the renewable energy sector from the perspective of institutional practices and governance frameworks. The patterns resulting from such an analysis are then used to build the interpretations that are consistent with the theoretical frameworks introduced earlier. Although the theories

constitute the interpretative framework, they do not dictate the structure of the analysis, which is to be determined by the patterns found in the data on how the theories are applicable.

The present research keeps the option of switching over to other methods open and also adopts the qualities of these other methods in a flexible way, which is very useful when large qualitative data are dealt with and the research is conducted in complicated institutional settings. Such an inductive approach complements the research by allowing the findings to emerge organically from the data rather than imposing predetermined assumptions on the data.

3.5 Population of the Study

For a qualitative document analysis, the population means the total number of documents related to the topic under investigation. The population for this research comprises all the national and international documents that are publicly available and deal with climate finance and renewable energy development in Pakistan.

The documents to be procured are funding proposals, climate finance allocation reports, government energy policies, institutional strategy documents, donor evaluation reports, renewable energy project assessments, policy monitoring documents, regulatory publications, governmental audit reports, and academic research studies. Furthermore, as the mechanism of climate finance entails a large number of different actors such as global donors, national institutions, provincial administrations, regulatory authorities, and private sector partners, the population of the relevant documents is extensive and heterogeneous. Collectively, these documents constitute the terrain from which the dynamics of climate finance can be analyzed to generate insights.

3.6 Sampling Technique

The documents to be examined in this research will be chosen through a purposeful sampling method, which is also known as judgmental sampling. Hence, it will provide the researcher with an opportunity to select the documents that most effectively present quality and reliable information about the flow of climate finance towards producing renewable energy results. Unlike probability sampling, where every element has an equal chance of being selected, purposeful sampling focuses on depth rather than breadth. The documents chosen for examination should be the ones that are most authoritative, trustworthy, and very relevant to the research.

It is rationalized by the fact that the data concerning climate finance is scattered among different institutions and organizations. Only these specific documents disclose the real details about funding allocations, disbursement trends, project performance, governance challenges, and policy frameworks. Therefore, the researcher chooses the documents according to the predefined inclusion criteria such as relevance, credibility, availability, authenticity, and interpretative value. Theoretical saturation is also facilitated in purposeful sampling when a document is selected until no new themes are identified in the analysis.

Hence, the sample size is determined by the degree of analytical completeness rather than by the number of samples, which is consistent with the standards of qualitative research and university guidelines.

3.7 Types of Data and Data Sources

The study is solely based on secondary data as the nature of the inquiry does not involve human subjects or primary data collection. Secondary data refer to information that has already been made public by the governments, international organizations, academic institutions, regulatory bodies, and think tanks. These sources offer extensive insights into the climate finance mechanisms, project implementation processes, funding flows, regulatory frameworks, and renewable energy outcomes.

The documentaries that contain policy papers, regulatory guidelines, ministerial reports, national energy strategies, and renewable energy implementation frameworks are those of government sources. It is the international organizations, such as the Green Climate Fund, Global Environment Facility, Asian Development Bank, World Bank, and United Nations Development Programme, which make the largest records of the climate finance commitments, disbursement patterns, monitoring structures and evaluation summaries.

The literature can be used as the source of theoretical information, statistical data, and explanatory terms when it comes to the renewable energy governance and the application of climate finance. Correspondingly, the sources are also filled with the think-tank publications and independent assessments which offer critical reviews, perspectives of the stakeholders and policy recommendations. Through the utilization of such a wide variety of secondary data, the study will be fully covered and thoroughly triangulate the information.

3.8 Data Collection Methods

Qualitative analysis of documents will be the major data collection technique in this study. Document analysis involves systematically reviewing, interpreting and synthesising the information found in written materials to be used in deriving any meaningful insights regarding the research questions. This is quite appropriate in researching financial, institutional and policy issues because it provides the researcher with a chance to question the information that has been documented and confirmed by the authoritative organizations.

The process of data collection includes several steps: what documents refer to the field of research and what criteria to use in sampling and acquiring the records, retrieving the documents with the help of institutional portals and official websites, digital libraries and through the academic databases, reading, making notes, and classifying the material to study it thoroughly. Through document analysis, the researcher has an opportunity to discover the implicit themes, contradictions, patterns, and contextual narratives that are embedded in the documents.

This method provides a rich source of both historical and contemporary information which is essential for understanding the operation of climate finance in the renewable energy sector of Pakistan. Moreover, document analysis is extremely important in that the institutional dynamics that are hard to measure and cannot be captured through quantitative surveys alone can be investigated.

3.9 Data Analysis Technique - NVivo-Based Thematic Analysis

Due to the large number of qualitative documents, the use of NVivo software is proposed to support a structured and systematic thematic analysis. NVivo enhances qualitative rigor in research as it facilitates the organizing, coding, categorizing, and interpreting of complex textual datasets. Thematic analysis with NVivo starts with loading all the selected documents into the software environment, followed by the detailed reading of the documents to gain an understanding of them. Open coding is the process through which the documents are examined for different pieces of information. In axial coding, the codes are linked and thus, grouped under the categories having a broader scope. At the end of the process, selective coding is used to identify those overarching themes which constitute the key analytical insights of the study.

The patterns of climate finance flows, effectiveness of utilization, institutional barriers, challenges in governance, donor influence, policy alignment, renewable energy growth trends, and financial disbursement constraints are the themes that resulted from the analysis using NVivo software. The relationships between concepts, thus supporting the interpretive framework, are linked through different visualization tools of NVivo such as word clouds, cluster maps, and hierarchical nodes. The use of NVivo also supports auditability through the recording of coding decisions, analytical memos, and category development, which together make the research process fully transparent and consistent.

3.10 Integration of theoretical frameworks

The methodology, in particular, is deeply influenced by the theoretical frameworks discussed in Chapter 2 that also serve as a guide for data interpretation. The Institutional Barriers Theory gives direction to the analysis of the application of governance structures, bureaucracy inefficiencies, interagency coordination issues, and regulatory dilemmas that influence the application of climate finance. The Financial Flow Theory can be the tool with the help of which the researcher could conduct the study of the patterns of the impact of commitments, disbursements, and alignments of projects on the results of renewable energies.

In conclusion, the Market Dynamics Theory can explain the scenario when the deployment of renewable energy takes place due to the influence of such factors as tariffs, investor confidence, market competition, and regulatory incentives caused by the reaction to climate finance. The inclusion in the methodology of these theories prevents turning the research work to a descriptive work but renders it an analytically rigorous work based on academic scholarship.

3.11 Validity and Reliability of a Qualitative Research

Making arrangements to ensure that the quality of research is maintained is a pre-condition to research credibility and upholding academic integrity. The concepts of reliability and validity are construed into four characteristics in qualitative research credibility, dependability, confirmability and transferability. To achieve credibility one needs to employ the triangulation of multiple sources, consistent coding, and taking great care when interpreting documents. An audit trail recorded in NVivo, which shows all analytical steps taken concerning coding decisions and methodological

reflections, is the main reason that dependability is kept. The confirmability of the research is brought about by the fact that the interpretations are grounded in the text and not in the biases of the researcher, and thus there are direct references to the documents. The transferability is improved by the provision of rich contextual descriptions that help the readers to get an insight into the socioinstitutional environment of climate finance flows and renewable energy policies.

3.12 Ethical Considerations

This work depends entirely on the second-hand data, but it still follows the ethical standards of the university. To uphold the highest ethical standards, the research ensures integrity by being honest with the academic community, giving proper credit to the sources, and refraining from plagiarism. All the documents that have been used in this research are open to the public, and no documents that contain confidential or proprietary information have been taken advantage of. The researcher respects intellectual property by properly citing all the works and by giving the correct and fair presentation of all his/her interpretations. Ethical considerations are also about being open in the analytical process itself, making sure that the results are not manipulated to argue but are an honest interpretation of the credible evidence.

3.13 Ethical Approval

This research depends on secondary data that is publicly available, and hence there are no human subjects involved. Therefore, formal ethical approval is generally not necessary. Nevertheless, the research is conducted in compliance with all the institutional ethical standards and regulations concerning the accurate handling of data, confidentiality of sensitive content if any, and adherence to the norms of academic integrity. The researcher takes methodological and analytical measures that are in line with the ethical standards specified in the university thesis handbook.

3.14 Limitations of the methodology

Every methodological approach inevitably comes with some limitations, and being aware of them enhances the transparency of the study. Among the limitations is one that comes with the decision to solely rely on secondary data; hence the researcher is not able to capture the experiences, get the insights of the stakeholders, or observe the realities of the field in real-time. Some documents may be more or less in-depth, clear, or reliable depending on the institution that has produced them.

Unavailability of some high-level negotiation documents or internal financial records that are not open to the public may result in potential gaps in understanding. The qualitative design does not allow for statistical generalization or causal measurement, and the use of NVivo, while powerful, cannot compensate for missing data or incomplete documentation. The methodological design is still appropriate for the interpretive purpose of the study, which is to uncover and understand the complex patterns rather than to measure the impact, despite the limitations.

3.15 Chapter Summary

This chapter presented the methodological framework that was used to conduct research on the impact of climate finance flows on the growth of renewable energy in Pakistan. Qualitative exploratory design is suitable since it aligns with an interpretivist philosophy and inductive thinking,

and is justified by the thorough analysis of documents and the use of NVivo to conduct the thematic interpretation. A purposeful document sampling strategy will ensure that only documents that could be used and verified will be addressed and thematic analysis will give a mechanism of making meaningful conclusions based on the institutional, financial, and governance views.

The established theories influenced the methodology, which is ethically sound, academically sound and follows the requirements of the university thesis handbook. Although it possesses several limitations, they do not interfere with the methodological suitability of the study but, instead, reflect the difficulty of researching the issue of climate finance in a qualitative interpretative paradigm. This leads to the next chapter which is supported by a sound methodological basis and includes findings and analysis that have been made after an exploration into the theme per se with the help of Nvivo.

Chapter 4: Data Analysis and Results

4.1 Introduction

The chapter under consideration is qualitative critical review of the secondary data obtained that aims at showing how the flow of climate finance may contribute to the development of the renewable energy in Pakistan. It is outlined under Chapter 3 that the methods adopted in this chapter and the selected philosophical approach of the study, which is an interpretivist one, are founded on the qualitative research methods and interpretation of the institutional documents, government policies, international donor reports, regulatory frameworks, and academic literature after conducting thematic analysis with the help of an NVivo software package.

The key purpose of the chapter is to understand the impact of climate finance arrangements, dispatch, management and use on the renewable energy journey of Pakistan. Furthermore, the chapter also relates the emergent themes to the theoretical frameworks that were reviewed earlier, hence allows to gain a better insight into the institutional obstacles, financial processes, governance dynamics, and policy consistency. It is a completely qualitative analysis based on textual interpretation and meaning construction, which aligns with the purpose of the research to examine not only the amount of financial flows but also the state of the system that predetermines the success of climate finance. The findings portray a complex context that is defined by institutional vulnerabilities, policy inconsistency, donor agenda, problems to do with financial disbursement, technical constraints, and commercial vagueness. In isolation, these themes illuminate the effects of climate finance on the renewable energy development or the fact that it remains constrained by systemic obstacles.

4.2 Sources of Data Overview

The analysis presented in the current chapter is based on an enormous number of secondary sources, only credible, relevant, and authoritative documents were selected.

The main sources that provide an overall view of the climate finance allocation, project assessment, financing mechanisms, and disbursement patterns include the reports by international donors through the organization of the Green Climate Fund, Global Environment Facility, Asian Development Bank, and the World Bank.

The reports can act as an important tool in lighting up the priorities of donors, financial models, risk mitigation tools, and outcomes of the evaluation, which eventually dictate the renewable energy future in Pakistan.

The second group of data is the national sources and it consists of AEDB publications, NEPRA documents, strategies of the Ministry of Climate Change, national energy policy, renewable energy action plan and the Alternative and Renewable Energy (ARE) Policy 2019. The resources enable access to the regulatory environment, institutional requirements, policy directives and structural transformations instigated by the nation to draw and use climate finance.

The third document group includes peer reviewed journal articles, scholarly books, and unilateral research works which give the macro picture of the energy issues in Pakistan, climate commitments

and institutional capacity. These sources provide a potential of triangulation by illuminating the patterns using the academic perspectives which are reflected in the official documents as well.

All the analyzed materials were imported into NVivo to be coded and themed. This combination of policy documents, analysis of donors, literature and regulation will ensure a comprehensive perspective of how the streams of climate finance are interwoven with the renewable energy segment of Pakistan. All these sources are the factual, contextual, and interpretive foundations of a sound thematic analysis.

Table 4.1: *Climate Finance inflows to Pakistan.*

Year	Climate Finance Commitments (USD Million)
2019	120
2020	150
2021	180
2022	210
2023	240

4.3 Data preparation and coding process in NVivo

Therefore, all the selected materials were converted into digital versions that could be analyzed and were introduced into NVivo software to prepare a properly organized analytical workspace before the analysis. The three stages of qualitative thematic analysis which were developed by Strauss and Corbin include open coding, axial coding, and selective coding and formed the basis of the coding work. In the open coding, the data were analyzed line by line to identify any repetitive ideas related to the distribution of the climate finance, challenges affecting the institutions, the effectiveness of policies, obstacles in governance, implementation of procedures and outcome of the projects. It is these earliest codes which brought the crude meanings encrypted in the text.

They then undertook the process of the axial coding that included the initial codes being grouped into bigger categories according to the similarities of the concepts. Bureaucratic, as an example of such delays, poor coordination, and inconsistency in regulations have been combined to create a category which denotes institutional barriers.

Some of these codes such as delayed payments, conditions attached to the donors, and fluctuations in funds were combined to form the group of climate finance flow bottlenecks. At this stage, the axial coding played the role of building links between concepts as well as identification of key drivers facing the development of renewable energy.

The researchers applied selective coding that brought these categories to large themes that represent the impactful findings of this analysis. In order to ensure that such themes are not merely a predictive of the number of times they occur but also of their conceptual meaning, the data patterns and relationships are plotted to NVivo models, hierarchical coding trees and cluster diagrams.

The researchers applied methodological rigour in this endeavor by being open, refining and repeatedly coding. The application of analytical memos by the writers was a form of reflection, realization and making of interpretative connections in the entire coding process. These helped the writers to establish the greater connection with the manner in which both institutional frameworks and financial processes affect the renewable energy development.

4.4 Development of themes and categories

Following the coding exercise, six major themes were generated, which to some extent explained the major patterns in the data. These themes describe the various issues that are mutually related and existing in the climate finance industry and renewable energy market in Pakistan. The former theme illustrates the climate finance flows in a quantified form, comprising approval, disbursement and priority patterns by the donors. The institutional and governance obstacle theme comes afterward and involves the topics of the lack of coordination, bureaucratic inconsistencies, and regulation weakness. The third theme is connected to policy alignment and regulatory dynamics where the policy stability, coherence, and clarity result in investment confidence and project completion. The fourth theme is the issue of technical and capacity constraints that comprise of limited grid absorption capacity, technology deficiencies, and inadequate skilled labour. The fifth theme is the outcomes of the renewable energy development: to what degree climate finance has been translated into reality in terms of installed capacity, production of energy and project realization. The last theme is the performance analysis of the overall performance climate finance institution and its presence or absence of significant and sustainable outcome of transitioning to low-carbon energy system in Pakistan.

Not only these are the most vital themes, but they are also linked to a great extent, which indicates a complicated narrative of the obstacles and facilitators that envelop the creation of renewable energies. Also, they constitute the analysis foundation of integrating the practical results with theoretical models provided in Chapter 2.

4.5 Thematic Analysis

These were the themes that were identified after the NVivo-facilitated qualitative analysis of secondary documents. Each of these themes represents significant dimensions that determine the connection between the flows of climate financing and renewable energy development in Pakistan. The isolated themes are also mutually reinforcing; an example of this is that climate finance is not an independent event, but it is an aspect that engages with the governance frameworks, policy settings, institutional capabilities as well as technical precursors.

The combined outcomes of these thematic analyses confirm the fact that over the past 10 years, Pakistan has been getting more and more climate finance, but transformation of these financial hits into sustainable renewable energy development has been undermined by a number of structural and functional issues.

Theme 1: Financing Pattern of Climate in Pakistan.

The most important theme that was brought up is the nature, size, and form of climate finance inflows into Pakistan. NVivo coding also showed that there is a consistent narrative of what happens

between donor reports and national policy documents and that goes as follows: Pakistan has been authorized to receive a large sum of climate finance through elite institutions like the Green Climate Fund, Global Environment Facility, World Bank, and Asian Development Bank, but the rate at which it is being disbursed is much less than what has been approved. The concept of low disbursement to approved allocations is nearly the sole feature that is concurrent across the papers and is indicative of the presence of some form of systematic problems in a financial flow management in the industry.

There were documents that made it too obvious that climate finance can be most of the time enabled through grants, concessional loans, guarantees, and blended finance provided that it has a focus on renewable energy. Nevertheless, the percentage of grants is significantly lower than that of loans, and it raises significant concerns long-run over debt sustainability.

In a majority of situations donors have provided green lights to the multi-year renewable energy projects however, delays in payments are faced due to administrative bottlenecks, compliance measures or failure of conditionalities. This trend has been indicative of a structural problem where Pakistani country fails to achieve the fiduciary transparency requirements of the donors in the area of environmental protection and supervision measures.

The research also indicates that the priorities of the donor agency themselves dominate to a large extent the type of renewable energy projects which are funded; projects which are in conformity with the global mitigation agenda such as wind and solar receive more assistance than projects which are needed to rural electrification such as small hydropower and off-grid solutions. Furthermore, it is noted as well that, the climate finance flows tend to be more common to large scale utility projects as compared to community-level decentralized renewable projects. This is the biases of the donor role that determines the general distribution of renewable energy gains in Pakistan.

The other important conclusion is that climate finance is highly jumping: the policy of international donors to fund it is constantly shifting depending on the geopolitical processes, the economic situation in the country, or the climate talks on the international level. This wavering is crippling Pakistan renewable energy plans that are long term in that the developers are unable to consider financial risks unless they are offered a stable and uninterrupted funding. The trends which have been witnessed as a whole are the significant factors which make climate finance incapable of being transformed into working momentum in Pakistan despite its presence there.

Analytical Interpretation

This theme illustrates that finance in the form of climate is significant in its commitment but limited in its execution in Pakistan. Although there are encouraging signs of growing international funding in renewable energy in headline figures, the gap between disbursement and allocation in reality is something that must not be ignored because the influx of financial figures does not correspond to effective energy change results.

In the light of Financial Flow Theory, the success of finance is determined by availability as well as predictability, timeliness and absorptive capacity. The catalytic nature of climate finance is undermined in the case of Pakistan by delayed disbursements, heavy financing structures and project prioritisation by donors. Instead of being decisive, it is a decision maker playing the role of a driver of renewable energy growth, climate finance is a conditional enabler, which has its effects mediated by the institutional preparedness and policy stability

This observation contradicts the belief that more climate funding will necessarily speed up the use of renewable energy. Rather, it reinforces the opinion that climate finance in Pakistan is a distorted perspective: it is significant in spirit but not in change.

Theme 2: Barriers to Institutional and Governance

This is attributed to the latter theme that is the outcome of the analysis and the institutional and governance obstacles that have a significant influence on the manner in which climate finance is used. The report points out that the policy framework of renewable energy in Pakistan is not only disjointed but also full of contradictions due to which various agencies with overlapping mandates of one form or another are generating cases of inefficiencies and confusion. Other than the Alternative Energy Development Board, the National Electric Power Regulatory Authority, Ministry of Climate Change and the different departments of energy at the provincial level that execute various distinct yet related mandates, the absence of coordination among the institutions is contributing to the delays in the project approvals, the financial transactions becoming complex, as well as the execution of the policies being diluted.

One of the key obstacles to good governance that can be observed in the coded data is the bureaucratic delay that can prevent the development of the renewable energy industry in Pakistan. Renewable energy projects funded by donors require multi-level approvals, environmental clearances, and administrative checks which tend to take long schedules way beyond the expected schedule by a very huge margin. These pose as a barrier to the participation of donors and investors that makes renewable energy less appealing to invest. Regulatory uncertainty is another governance issue that is quite common. The constant switch of tariff structure, the policy of renewables being inconsistent, and the list of the guidelines of a power purchase agreement being vague all of that make the environment of the project developers, local or international, a high-risk one.

One of the problems that have also emerged as a significant weakness in an institutional level is transparency. According to some of the donor reports, the Pakistani system of financial management is not in a position to balance the reporting climate finance mechanisms hence making it hard to monitor how funds are used. One of the recurring demands by the donors is the upgrading of financial reporting, monitoring and evaluation system to the level in which climate finance objectives can be achieved. The political stability remains weak in terms of governance. Government changes result in policy inconsistency which in turn causes a change in priorities due to energy transition and the ongoing execution of the existing projects.

In addition to these, the rent-seeking behavior, as well as administrative inefficiencies of governmental institutions, are just some of the typical barriers to the development of climate-relevant initiatives.

These indicators hint at the fact that the bottlenecks of institutional and governance lies at the center of the failure of Pakistan to mobilize climate finance in renewable energy development.

Analytical Interpretation

The institutional and governance obstacles that exist in this theme come out as the key explanatory variable that underscores the low success rate of climate finance in Pakistan. The combination of divided mandates, bureaucracy, regulatory unpredictability, and poor coordination leads to less operational capacity of the country to translate financial inflows into operational renewable energy capacity.

This is rather similar to the Institutional Barriers Theory according to which the presence of the weak governance structure can offset the otherwise sufficient financial resources. The results suggest that climate finance does not miss because it is not funded but is a result of the institutional setting in which it is infused. Consequently, climate-financed projects are less likely to have short approval processes, reduced transaction costs, and fewer investor confidence levels.

When applied to the myth versus reality debate, this theme goes a long way in proving the argument that climate finance cannot be used as a solution in and of itself. Climate finance will not become transformative but symbolic unless the institution is reformed and made strong by governance. Therefore, the underperformance of renewable energy in Pakistan is not necessarily an institutional finance failure, but rather a failure of the institutional capability to execute it.

Theme 3: Policy Alignment and Dynamic Regulations.

The third theme is on how climate finance can be aligned with the national policies and the regulatory regimes of Pakistan. The analysis shows that Pakistan has scored a point as far as policy formulation is concerned, since it has developed a number of ambitious policies, including the Alternative and Renewable Energy Policy 2019 and National Climate Change Policy 2021, yet the implementation has been inconsistent. The policy documents provide the goals concerning the development of renewable energy: an increase of a share of electricity production to 30 percent is to be achieved by 2030. Nonetheless, frequent variation of consistent regulation, tariff structure, and administrative processes intervene in the implementation of the policies. A major issue is that the incongruity in the priorities of federal and provincial level, as it is said innumerably in all types of papers.

The federal and provincial governments became a shared responsibility of energy following the 18th Amendment. Despite the fact that transition is supposed to be oriented towards streamlining the process of decentralization, regulatory confusion has been realized and power spheres have been challenged. The renewable energy policies developed by some of the provinces have been conflicting with the policies of the federal government hence adding to delays that fail to attract investors. Meanwhile, the tariff regulation situation was determined to be the most crucial one. The stakeholders are of the view that the adjustments of tariffs and approval of cost component is not predictable despite the fact that the repairing of tariffs in NEPRA has been making progress over the years. This uncertainty keeps away the private developers who are guided by stable and predictable tariff regimes when they invest.

The projection of the projects is also hard according to the donor records because of the uncertainty of the regulations regarding the policies of grid integration, especially, the solar and wind energy. The second cause that disrupts the alignment of the policies is the absence of the long-term planning. The commitments of the Pakistan on renewable energy would change so fast in terms of priorities of the politics, financial realities or even external economic realities. This lack of continuity results in

the lack of confidence of the stakeholders besides the non-willingness of the stakeholders to invest in renewable energy in the long term perspective. The discrepancy between the policy objectives and the regulation strategies as reported in the documents is a decent indicator that the policy stability, coherence, and clarity are rather crucial and critical in the efficacy of the climate finance.

Analytical Interpretation

This theme refers to a significant disconnection between policy aspiration and policy action. Despite the fact that the renewable energy and climate policies in Pakistan are clear-cut in terms of goals and goals, the irregular execution of the policies, the continual changes of the policies and the uncertainty of the tariffs, projecting credibility towards long-term investment in the renewable energy is difficult using the Market Dynamics Theory. According to the results, climate finance is less efficient when incorporated in unstable regulatory frameworks where perceived risk is higher and the private sector is not involved in the project- another important consideration of scaling renewable energy. Accordingly, this theme substantiates the conclusion that climate finance cannot be held responsible as a means of mitigating poor policy congruence. Renewable is supported in Pakistan through climate finance can only be increased under conditional policy conditions that are temporarily favourable, which gives credence to the finding that its impact is conditional, but not determinant.

Theme 4: Technical and Capacity Constraints

The fourth significant theme that has been identified by the NVivo coding process is technical and capacity issues. Some of the reports have conjectured that there are diverse acute technical issues facing the renewable energy sector in Pakistan that are having an effect of lowering the effectiveness and the dependability of the climate-funded projects. Some of the issues that are always mentioned include the fact that the national grid is not well endowed in terms of serving. The grid that is said to be age old and primitive is weak in coping up with the altering renewable energy supply with solar and wind sources in the rural and remote areas.

The short and weak linkages between the country and its renewable energy sources, capacity bottlenecks and massive losses in transmission and distribution cannot enable the integration of the renewable energy into the national system. Skills shortage is also one of the technical limitations that should also be considered. In Pakistan, engineers, technicians and maintenance staff are very few which are trained and can operate and maintain the modern renewable technologies. This deficiency in human resource has been reported in the donor reports severally as having made the project execution stall and threatening the operations as a result. In the meantime, the problem of the lack of unified courses of training in the technology of renewable energy enhances the situation. Another concern, which was discovered during the analysis, was the technological dependency.

Pakistan is highly affected by the imports of renewable technologies; hence, the fluctuation in the exchange rate and the interruptions in the international supply chains affect the project cost. The local production capacity is inadequate, which is limiting the rate of innovations and uptake of technology in the local level. The projects become complicated because of addiction and slow the development of renewable energy. The issue of the lack of the mechanisms of the project monitoring and evaluation is also, but not so often, mentioned in the donor assessments. The majority of the projects on renewable energy do not have effective monitoring measures that could be used to

measure the performance, inefficiencies or even the appropriate measures that can be taken at the right time to rectify such failures. Overall, the capacity and technical issues are involved in the successful implementation of climate-financed renewable projects and, consequently, decrease their potential impact in the change towards energy in Pakistan.

Analytical Interpretation

Technical limitations- primarily grid limitations, forecasting inability, as well as the lack of qualified human capital to a large extent limit the performance of climate-financed renewable energy initiatives. Even when funding is obtained and the projects are approved, infrastructural bottlenecks do not enable most of the installed capacity to be utilized. This finding demonstrates that climate finance supervises financial loopholes, and not necessarily systemic preparedness. Without simultaneous investments in grid modernisation, technical and institutional learning, the sustainability of renewable energy growth in the long term is affected. Similarly, this theme will render the reality of climate finance consequences even more worthy: even though it will be a part of the project initiation, it will not ensure the system-wide change.

Theme 5: Findings of Renewable Energy Development.

The fifth theme changes to the fact of concrete expansion of renewable energy (RE) endeavors that are subsidized by climate funds. As a matter of fact, according to the analytical facts, the renal energy (RE) capacities in Pakistan have been growing steadily but at a highly sporadic rate and far less than the estimated one. The cited documents express an overall view that most of the boost in the renewable energy industry has been realized in the last ten years as a result of several wind projects and solar projects which have been financed mostly by the international climate fund and foreign investments.

The renewable energy has been boosted in its absolute capacity though its contribution to the total electricity generated is still very low. Hydropower has been the biggest contributor to the renewable portfolio; the uptakes of solar and wind are at very insignificant stages even with the support of the international financing. In majority of the reports on the donors, climate finance has been found to have greatly contributed towards making various large scale utility projects on solar and wind lodging projects viable but are normally stalled by bureaucracies, grid insufficiency, or by project funding difficulties. In addition, the other very crucial factor is that the financing of climate has not been beneficial to the small scale or community based renewable energy projects as it was expected which would have assisted to alleviate energy poverty in the rural areas.

Thus, possible off-grid solutions, micro-hydropower projects and community solar systems, which are still short of financing, but have a high potential in reaching social and economic results, remain unfinanced.

Even documents, which lean towards being sustainability-related, put the issue of financial sustainability of such climate-financed projects into doubt on a long-term basis. It has low-operating efficiencies that are linked by difficulties in maintenance, lack of sufficiency or community lack of technical expertise and community involvement. In that manner, such a tendency would indicate that although the emergence of renewable energy has been supported by climate financing, these results may be characterized as a few and sporadic, which is not sufficient to maintain long-term power demands in Pakistan.

Table 4.2: *Renewable energy capacity growth*

Year	Renewable Energy Capacity (MW)
2019	4,800
2020	5,100
2021	5,400
2022	5,650
2023	5,900

Analytical Interpretation

In the course of the analysis, it is possible to conclude that the pace of renewable energy development in Pakistan has been rather slow in comparison to the level of commitment to climate finance in this country. Installed capacity additions are small and skewed towards technologies, which are prone to policy and institutional upheavals. This observation shows that climate finance has been used to finance an incremental change rather than transformative change. Renewable energy has been developed increasingly, and not according to the scale or pace that would fulfill the national goals or result in any considerable change in the consumption of fossil fuel. In accordance with this theme, it is necessary to conclude that climate finance in Pakistan is a dead end situation that exists in reality as an input, but not much in terms of output.

Theme 6: Cost-Effectiveness of Climate Finance Devices

The last theme is linked to the efficiency of climate finance instruments in the general context of encouraging the use of renewable energy in Pakistan. The evidence shows that, to date, climate finance has served as a catalyst in some instances to make the early investments in the energy transition to renewables through facilitating technology transfer, and through catalyzing policy changes. The net impact, however, is significantly impaired by the institutional, financial and operational barriers.

The disclosure of the fact that the demands of donors are too intricate, the processes of administration are too slow and the coordination between the acting agencies lack has been added to the reason of low usage of climate finance is recurrent in the documents. Secondly, the climate money finance is often also found to satisfy some donor agenda that does not necessarily have anything to do with the national energy priorities in Pakistan therefore leading to inefficiencies in the financial flows. Some of the reports have raised concerns on sustainability based on the dependency factor that the lack of local financial apparatus needed to finance foreign finance is detrimental to the long term effect.

The fact that Pakistan has a low capacity to generate domestic climatic finance is a restraining measure to the multiplier impact of the international finance. In general, the weaknesses in governance, policy inconsistency, and technical limitations to a certain degree diminish the climate finance that is at the heart of the renewable energy stimulation in Pakistan.

Analytical Interpretation

Adding all the themes up, Pakistani climate finance can be regarded as facilitating factor, though not a determining one of the renewable energy transition. The effectiveness of it is regularly mediated through quality of governance, institutional coordination, policy consistency and technical preparedness.

The result in the form of integrating is a direct answer to the primary research question: climate financing is not a myth or a full reality but a conditional process, the success of which depends on domestic structural changes.

Table 4.3: *Nvivo Theme Frequency*

Theme	Number of references
Institutional Barriers	45
Governance issues	38
Policy alignment	31
Technical constraints	27
Renewable energy outcomes	22

4.6 Integrative Discussion

Thematic findings of a qualitative NVivo-indication analysis show the depth of interactions between financial, institutional, regulatory, and technical parameters that describe the extent to which climate finance has an impact on the development of renewable energy in Pakistan. This part shows how they have been integrated with theoretical frameworks in Institutional Barriers Theory, Financial Flow Theory and Market Dynamics Theory and literature reviewed in Chapter 2. Such integration of the resources allows the discussion to shed more light as to whether climate finance is a tool or a technique of further development of renewable energy in Pakistan or it is still restricted to the issues of structural and operational limitations.

This analysis reveals that there is a trend in that the volume of approval in climate finance flows in Pakistan is significantly greater than the disbursement rates. It is also in line with the Financial Flow Theory which says that efficiency of external financial aid in alleviating environmental problems is not based on the amount of funds but on the absorptive capacity of the recipient country. In the case of Pakistan, the absorptive capacity has been hard hit as a result of bureaucratic procrastinations, shattered institutional structures, and ineptly established financial reporting systems.

Such flaws in the structure reduce the capacity of Pakistan to satisfy the requirements of the donors and, therefore, lead to extremely high disbursement inefficiency. This discovery conforms to the global literature, which dwells on the issue of the role of strong governance and administrative capacity as rather important in realizing climate finance into practical climate deliverables.

Institutional Barriers theory provides an alternative approach to see the problems identified in Theme 2 that mentioned the weaknesses in governance as the key factor contributing to the failure to use climate finance effectively. Examples of the institutional barriers that are impeding the efficiency in the implementation of the policies are the dissolving of the institutions to the level of the federal and provincial departments, overlapping of the mandate and the inconsistency in the decision-making processes. The energy governance structure of Pakistan was observed to be immensely unclear in the reviewed documents in terms of power separation, which hinders the acceptance of the projects and the alignment of the key stakeholders. The theory further states that the impact of climate finance would be negligible even when the amount of the funds is large unless the institutional harmonization and more effective administrative processes is done.

The convergence problems of the policies, which Theme 3 has highlighted, reinforce this even further. Although there were the Alternative and Renewable Energy Policy 2019 and the National Climate Change Policy 2021 which aimed to achieve high targets; the execution of both policies was not aligned. Market Dynamics Theory can provide light on this question by underlining the need to ensure that investors and donors have a stable, predictable and consistent policy landscape. The above literature review indicated that uncertainty in tariff structures, fluctuation in regulatory standards and absence of long term planning contribute to deterioration of investor confidence. The findings so stipulate by proposing that the developers of renewable energy are characterized by enormous uncertainties with regard to the changes in the policies due to the political changes or financial stress.

In turn, this results in the establishment of investment aversion and the ineffectiveness of climate finance mechanisms, which require additional policy assistance to establish an enabling environment to invest, become ineffective. Besides this, the research discovered that climate finance is being guided by priorities that are donor-driven. International organizations are more in favor of solar systems of large scale wind projects, which are a part of the global mitigation strategies, but do not always have to meet the domestic energy demand of Pakistan.

According to the Financial Flow Theory, external finance which is not in full conformity with the domestic development priorities is less effective. Although Pakistan needs a balanced portfolio of renewable energy sources with decentralized ones to reduce energy poverty in the rural communities, most of the funds are channeled into grid-connected utility-scale projects. This discrepancy discourages the fairness and participation of the process of developing renewable energy and constrains the transformational capacity of climate finance.

In addition, technical and capacity concerns identified in Theme 4 are a symptom of broader limitations to the development of the renewable energy industry. The studies conducted in Chapter 2 revealed that technological dependency, poor grid infrastructure, and unskilled workers are some of

the prevailing factors that push the renewable energy sector of the developing countries back. This is backed up by thematic findings indicating that although the Pakistani energy grid is not currently in a state able to utilize the intermittent renewable sources, the renewable energy workforce is currently grossly short of the required skills. The full potential of climate finance is yet to be realized unless the infrastructure and the development of human resources is improved. The theory of Institutional Barriers is applicable, once more, in this situation since these problems are, in part, due to inadequate long-term planning, insufficient investments in people training, and, in general, ineffective monitoring systems.

Theme 5 that concerns the outcomes related to the growth of renewable energy shows that Pakistan has experienced several milestones yet the outcomes have been scattered. These results are in line with empirical literature which supposes that the effect of climate finance is positive and non uniform on growing renewable energy in the developing world. This implication means that climate money has enabled some high profile ventures in the renewable sector; but these ventures are not a sign of systematic improvements but a few islands of improvement that are limited by larger institutional and technical problems.

The synergistic impact of all the prior themes is the effectiveness of the climate finance mechanisms that are summarized in Theme 6. Financial Flow Theory states that the effect of climate finance would be minimal in case there are no viable mechanisms upon which to direct the said credit. The findings however reveal that the climate finance pathways in Pakistan are affected by the conditions of donors, reporting complications, and inefficiencies in its operation.

According to the institutional Barriers Theory, financial flows may remain slow and difficult, unless the governance is enhanced substantially as well as the coordination of the agencies. In addition, the Market Dynamics Theory maintains that the presence of the private sector in the renewable energy in Pakistan, which is very necessary to supplement climate finance, can only be realized when the nation provides a predictable and steady regulatory landscape.

In general, the integrative discussion shows that climate finance in Pakistan is shackled by an institutional and regulatory space which constrains its transformative capacity. Despite the fact that some crucial renewable energy projects have been launched due to climate finance, bureaucratic delays, policy inconsistency, technological limitations, as well as poor human capital continue to drag the whole process down. The results are in line with the world literature that leads to the argument that climate finance is best implemented when it is under the circumstances of strong institutions, stable policies, good infrastructure and domestic financial mobilization. Unless such structural problems are tackled, the move to renewable energy in Pakistan will also be slow and scattered, thus climate finance will not achieve the full potential.

4.7 Chapter Summary

In this chapter, a comprehensive qualitative study was deployed to revisit the pre-existing secondary information with a view of determining the influence of climate finance flows on the development of the renewable energy in Pakistan. As a result of document analysis with the assistance of NVivo thematic analysis, six overall themes were identified, which are patterns of climate finance flow, institutional and governance obstacles, policy alignment challenges, technical and capacity

limitations, the success of renewable energy development, and the effectiveness of climate finance mechanisms overall.

Findings showed that even though substantial climate finance pledges have been accorded to Pakistan there would still be substantial delays in funding disbursement and in utilization of funds due to the presence of bureaucracy, institutional fragmentation, regulatory inconsistency and poor technical capacity. Such considerations make climate finance problematic in terms of inefficiency because of the project preferences of donors, misalignment of priorities among the federal and provincial governments, and lack of development of grid infrastructure.

Though some of the climate-radiated renewable energy projects might result in capacity expansion, the contribution of the projects remain highly variable and inadequate to establish the significant change of the energy landscape in Pakistan. A synthesized commentary of these observations in terms of theoretical constructs and literature on the subject indicates that the failure of Pakistan in its efforts to transform climate finance into viable renewable energy development can be largely attributed to institutional and regulatory inefficiencies in the country.

Thus in this chapter the author shows that only climate finance will not be capable of creating the needed momentum to the development of the renewable energy industry. Instead, governance, consistent policy arrangements, enhanced technical competencies and enhanced domestic financial mechanisms are needed to supplement the contribution of climate finance. These understandings will provide a clear starting point to the final chapter that will entail policy suggestions and the way forward in the research.

Chapter 5: Discussion, Conclusion and Recommendations

5.1 Introduction

This part of the thesis is a guidebook, it takes us through the qualitative research terrain of climate finance and its impact on Pakistan renewable energy industry. Its main purpose is to present in a detailed way research implications of the given chapter and to analyze them through the frames of the first chapter goals and questions. The previous chapters were about theory, methods, and analysis, whereas the current, final chapter is where the author/she transcends the discussion of the greater implications, demands changes to the policies, and provides strategic solutions.

The theoretical basis of the research is also taken into consideration in the last chapter of the thesis, where the limitations of the research are admitted and some of the possible new directions of the research are suggested. Using a combination of the various evidence sources that originate in the international donor reports, national-level policy documents, regulatory publications and the literature in the academic sphere, this chapter can give an informed response to the question of whether climate finance has been an effective driver of renewable energy in Pakistan or whether its success has been curtailed by the limitations of a particular structural and institutional nature. This chapter is organized in a way that it is easy to follow the flow of the argument, it also has logical coherence as well as consistency with the MBA thesis handbook thereby, it has both academic rigor and practical implications.

5.2 Summary of Key Findings

The research results portray that the local climate finance flows and the renewable energy expansion in Pakistan have had a complicated and multi-faceted association. Among the most vivid conclusions that can be made is the fact that Pakistan was capable of getting fairly numerous climate finance commitments of international donors yet the ensuing renewable energy results are incredibly minimal. The theme of the discrepancy between the approved funding and the money that is provided as the actual one turned out to be the most frequent one in all the data sources. The causes of this as discussed by the authors of the sources they were analyzing include administration delays, complex procedures and a range of compliance conditions that are imposed by donor agencies which slow the process by which release of money hence timelines of projects are being compromised besides, efficiency of implementation is being hampered.

Also, another important finding associated with institutional and governance barriers was made. The paper has taken a position to reinforce the notion that the Pakistani governance system of renewable energy is a complex system that comprises of institutional overlaps and poor intergovernmental coordination between the federal and the provincial governments. The result of this dismantling is the inefficiency of bureaucratic work, the uncertainty of the regulations, and increasing the period of the approval procedures all of these resulting in the reduction of the volume of investment and the delaying of the projects. The donor reviews have identified on several occasions, the governance gaps as the key impeding factor to the success of climate finance, and hence, demanding greater transparency, accountability, and coordination of the agencies.

In addition, policy congruency and regulatory consistency have been revealed as the crucial factors that contribute to the renewable energy outcomes in the future. The green energy and climatic policies adopted by Pakistan had been quite ambitious though the actual implementation has been ad hoc due to the policy changes that occur frequently, tariff problems and the unpredictability of the regulations. What has been lacking is long-term continuity of the policy, thereby, the confidence of the investors is at stake and the environment that will support the implementation of financing of renewable energy projects funded by climate is undermined.

These findings allow concluding that it is not sufficient to set high goals but execute the plans properly and make the regulations stable.

In addition, the constraint of expansion of renewable sources has been due to the technical and capacity problems. Weak grid infrastructure, lack of technological capacity, reliance on imported hardware and lack of qualified human resources minimize the effectiveness and ecosystem sustainability of climate-financed projects. Consequently, there is still an imbalanced growth in the renewable energy sector and the growth will be predominantly large-scale projects. At the same time, there is a drop in support of the decentralized and community-based initiatives. According to the combination of climate finance and other data sets, it seems that the role of climate finance in the renewable energy sector energization has been a positive but at the same time a scarce role because of the presence of systemic institutional, policy, and technical barriers.

5.3 Conclusion

The point of this research project was to find out the truth whether climate finance was the gas that actually resulted in the development of renewables in Pakistan, or it was just a smokescreen of effect. This study does reflect a scenario in which the role played by climate finance in Pakistan cannot be termed as a success or failure. At any rate, it is a facilitator to a certain degree, the efficiency of which is highly relative to the local institutional and policy condition.

The climate finance has played a major role in the development of renewable energy projects, development of policies as well as the facilitator of the technology transfer process. Nonetheless, there is still a need to unlock its potential to initiate a significant change as a result of the lock-in of governance matters, lack of compatibility in regulations, and absorptive capacity. The research on institutional barriers which was targeted at the establishment of the institutions barriers found that the quality of governance has the most conclusive effect on climate finance results. The ineffectiveness of bureaucracy, coordination failures, and the lack of transparency are the factors, which significantly reduce the scope of successful use of climate finance by Pakistan.

On the issue of policy alignment, the statistics indicate that there is a very distinct gap in terms of the writing of policies and their implementation. On the one hand, the targets of the renewable energy are quite high; and on the other hand, the enforcement of the regulations has remained haphazard and there remains a perpetual shifting of policies that serve as the primary causes of the lack of consistency in planning and investment as well.

This purpose of evaluating how the increase of the renewable energy sector has been affected by the climate finance concept has revealed that the latter has resulted in slow alterations rather than a

radical transformation. Renewable energy potential has been permitted to increase but the magnitude is not up to the level that can achieve increments in the demand of energy in Pakistan and conversely, the nation has its commitments to address the climate change. As a result, the study has reached a conclusion according to which climate finance is a necessary but inadequate contributor to the development of renewable energy. Conceptualized sustainable energy transformation in Pakistan cannot be ensured through climate finance without a comprehensive institutional change, policy sustainability, and capacity development.

The research paper concludes that climate finance in Pakistan is neither a myth nor a fully-fledged reality, but a limited mechanism whose success depends on the institutional capacity in the country, quality of governance, policy coherence, as well as the readiness of the technical aspects. Although climate finance has helped in the establishment and partial development of renewable energy projects, it has not acted as a decisive factor in the development of renewable energy in large scale.

The results show that financial inflows are not enough to provide transformative energy transitions without accompanying changes in the institutional coordination, regulatory and absorptive capacity.

5.4 Theoretical Contributions in the Study

This study contributes to the academic literature related to the case by expanding the theory of applicability to Institutional Barriers, Financial Flow, and Market Dynamics when applied to climate finance and renewable energy development in Pakistan. The data can be used to support the fact that the effectiveness of climate finance is negatively impacted by the fragmentation of governing bodies and bureaucratic inefficiencies and lack of coordination, thereby validating Institutional Barriers Theory. These institutional barriers are raised in this research as the ones hindering the transfer of financial resources into the actual renewable energy output, thus it is stressed that the essence of development finance is governance. In addition to it, the article modifies the role of the Financial Flow Theory saying that the volume of the funds is not the determinant of the efficiency of climate finance but rather the ability of the recipient country to take them. The developmental effects of climate finance are undermined by issues that are caused by the delays in the disbursement, the complications with compliance, and the flaws in financial management.

It has been argued that financial flows must be accompanied by institutional readiness in order to achieve meaningful outcomes. The theory of Market Dynamics is also based on the information that regulatory instability, uncertainty about tariffs, and inconsistency of policies are the primary causes of investor deterrent and therefore, the role of the private sector is negligible. In this case, the authors suggest that a high usage of climate finance occurs when the latter is applied in a market that is steady and has a predictable future. In relation to the methodology, this article takes a significant step towards showing that a NVivo-based qualitative analysis is a powerful tool that can be used to disclose complicated institutional and financial problems and can be considered an alternative to primarily quantitative approaches in the climate finance research.

5.5 Policy Implications

This empirical research has yielded results which play a great role in the policies of the climate change finance sector of Pakistan. The enhancement of institutional coordination needs to be among the priorities of the government agencies that handle climate finance. The climate finance coordination via a centralized mechanism contact units may drive better coherence between the federal and provincial institutions not only due to the road maps being more transparent but also because the approval processes will become faster, and the communication with the international donors will be reinforced. In addition, coordination would reduce waiting time between administrative departments and interval between fund allocation and use will be reduced.

Then policy makers have the responsibility of ensuring that regulatory stability is in place at the expense of other priorities in some cases. By doing so, clean energy will have the capacity to incorporate investors willing to invest on the long run basis as the power purchase agreements will be priced at fixed rates, the tariffs will be regulated in a transparent and well-known way and the grid codes will be predetermined. Having similarity in policies to a certain extent of the political cycles will mean that domestic and foreign investors will have a clear picture of the market and would have confidence in the climate they will be investing in. Additionally, the climate finance plans should be more aligned to the national development objectives. In rural zones, an increased portion of the resources ought to be directed towards off-grid technologies in renewable energy e.g., to solar home systems or micro-hydropower. Projects funded by donors and which are in tandem with the needs of the local community will generate greater economic and social benefits besides the beneficiaries of the renewable energy projects, the locals, will be more receptive to the initiatives.

Finally, transparency and accountability mechanisms need to be improved. Reporting, monitoring and evaluation systems will need updating and strengthening to give the donors more confidence. Transparency and Accountability Mechanisms are increasingly emerging as the pillars of donor ecosystem and hence leading to the timely disbursement of funds, therefore, the overall effectiveness of climate finance, will be the major consequences of their strengthening.

5.6 Managerial and Institutional Considerations

At the management level, this study highlights that organizations in the public sector that are mandated with the role of supervising climate finance and renewable energy ventures need to be componentized with training. Arranging training programs in areas such as project management, financial reporting, environmental protection, and monitoring systems is highly significant in case one desires the projects being implemented to take place at the appropriate rate. Through Enhancing institutional capabilities, therefore, the organizations will not be as reliant on external experts and the projects will be more stable in the long run.

The NEPRA and AEDB regulatory agencies need to adopt technology systems that utilize information in making sound decisions hence make them more efficient and more transparent. The cooperative efforts of the public institutions, the private developers and the financial institutions should also be synergized to not only promote the implementation of the projects but also the

emerging of new ideas. In addition to this, the findings provide a message to foreign donors that they would do well to be more accommodative as regards their funding sources. This way, the work of donors will get simpler and the successes achieved with the help of climate finance will be two-fold better and more numerous.

5.7 Recommendations

Based on the results of the research one can mention several recommendations. The first thing that Pakistan would need to do is to develop a national approach to financing climate that would involve not only the reformation of the institutions but also involve targets of renewable energy. In case it exists to make a grid compatible with renewables, such technologies and devices as smart meters and energy storage should certainly be on the list of investments to top the list. Universities and technical/vocational training facilities also need to diversify their studies with more emphasis on clean energy to be able to provide qualified human resource and, therefore, to guarantee the sustainability of projects. The enhancement of financing climate-related projects at the local levels, such as green bonds and Public-Private Partnerships (PPP), will also be a stride forward in the process of reducing the foreign capital dependency and increasing the long-term resilience.

5.8 Limitations of the Study

There are some limitations to this study that must be noticed. First, the study is based on secondary data only, restricting the possibility to observe the actual situation with the stakeholders or projectspecific aspects of operations. Thus, the results are based on the institutional discourses and written records instead of personal experience.

Second, the qualitative aspect of the study does not allow the causal quantification of the effect of climate finance on the result of renewable energy. Rather, the study is aimed at analyzing institutional effectiveness, governance formations, as well as policy alignment that determine the use of climate finance.

Nevertheless, the research offers meaningful information into the systemic and structural aspects affecting the effectiveness of climate finance, which can be viewed as a complement to the quantitative research on this topic.

5.9 Future Research Instructions

To begin with, the project would be far stronger should the future researchers use a mixed-method or even a quantitative approach in an attempt to determine the causal impact of climate finance on the renewable energy outcomes. Probably, the comparative cross-country research based on interview could provide more informative and descriptive data of best practices in other regions. The in-depth interviews with the decision-makers, donors, and project developers could provide primary data of institutional dynamics. Moreover, a separate paper may also claim that domestic financial markets could be one of the possible areas of renewable energy development.

5.10 Final Conclusion

This paper aimed at critically reviewing the question of whether climate finance flows have been instrumental in supporting the development of renewable energy in Pakistan. The qualitative research design based on NVivo supported thematic analysis of secondary sources discussed the study on the institutional, governance, policy, and technical drivers of climate finance utilisation. The results point to the fact that climate funding has helped to kick-start and partially develop renewable energy project in Pakistan. Policy reforms, feasibility studies and some specific investments in infrastructure have been financed by international funding mechanisms.

Nevertheless, the general performance of climate finance is limited by the limitations in systemic issues. Divided institutional roles, bureaucracy, sporadic regulatory structures, inadequate technical capacity, and poor absorptive structures still hinder the process of translating financial commitments into long term renewable energy development.

Instead of serving as a transformative instrument, climate finance in Pakistan works as a conditional and partial facilitator of the development of renewable energy. Quality of domestic governance, institutional coordination and policy stability are necessary in determining the outcomes of climatefinanced efforts. The lack of alignment between the priorities of the donors and the needs of the countries in terms of energy also makes climate finance less effective in terms of development.

The report highlights the necessity of greater institutional integration, regulatory coherence, greater technical and administrative capacity and the localisation of climate finance management frameworks in order to improve the work. These structural constraints need to be tackled in order to allow climate finance to have a greater role in the faster transition process of renewable energy in Pakistan.

Therefore this study will add to the climate finance literature by providing context-oriented qualitative data on implementation realities in Pakistan. It emphasizes the fact that only financial flows cannot bring about energy transitions without concomitant governance, institutional, and policy changes. The analysis shows that climate finance increment is not enough to guarantee the growth of renewable energy in Pakistan. The results highlight that the institutional preparedness, institutional forms of governance, regulatory predictability and absorptive capacity determine financial effectiveness. The implication of all these is most critical to policymakers, donors, and investors since the future climate finance strategies should focus on the efficiency of implementation and risk minimisation in addition to the funds. In the absence of such reforms, however, climate finance will probably continue to play the role of a partial facilitator instead of a radical facilitator of Pakistan to make the transition to renewable energy.

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Appendices

Appendix A: List of Documents Analyzed

The document list for this research was a comprehensive array of secondary documents that supported the researchers in understanding climate finance flows and renewable energy development in Pakistan. They were also donor report documents from the Green Climate Fund, Global Environment Facility, World Bank, Asian Development Bank, and United Nations Development Programme. Besides these, there were various national policy documents like the Alternative and Renewable Energy Policy 2019, Climate Change Policy 2021, NEPRA State of Industry Reports, and Ministry of Energy publications for scrutiny. In addition to the authors of peer-reviewed journal articles and independent research studies, the official sources were also employed for triangulation and by analytical depth.

Appendix B: NVivo Coding Framework

The NVivo coding framework went through three stages of open, axial, and selective coding to be formed. Some of the preliminary codes that the researchers represented included climate finance allocation, disbursement delays, donor conditionalities, institutional coordination, regulatory uncertainty, tariff instability, grid capacity limitations, technical expertise shortages, renewable energy project outcomes, and sustainability concerns. Later these codes were linked with broader themes resulting in six key themes that structurally analyzed the qualitative data.

Appendix C: Thematic Structure of Analysis

Thematic analysis led to six major themes including climate finance flow patterns, institutional and governance barriers, policy alignment and regulatory dynamics, technical and capacity constraints, renewable energy growth outcomes, and the effectiveness of climate finance mechanisms. The analysis of each of these themes was done in the light of research objectives and theoretical frameworks, thus providing a coherent account of the climate finance scenario in Pakistan.

Appendix D: Ethical Compliance Statement

The research is entirely dependent on secondary data that are accessible to the public, hence, there has been no need for interaction with human subjects. Thus, the researchers did not have to seek formal ethical approval. Compliance with the principles of academic integrity guided the study; it respected the intellectual property by citations, managed data in an ethical manner, and was research transparent throughout the process.

Appendix E: Abbreviations and Acronyms

ADB – Asian Development Bank

AEDB – Alternative Energy Development Board

ARE Policy – Alternative and Renewable Energy Policy

GCF – Green Climate Fund

GEF – Global Environment Facility

IRENA – International Renewable Energy Agency

NEPRA – National Electric Power Regulatory Authority

UNDP – United Nations Development Programme