



RENEWABLES FIRST

# Capitalizing on **GREEN**

## A Stocktake of **Renewable Energy** Finance for Pakistan



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**Renewable Energy**  
Finance for Pakistan

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## List of Abbreviations

<b>EMDEs</b>	Emerging and Developing Economies
<b>IFC</b>	International Finance Corporation
<b>ADB</b>	Asian Development Bank
<b>CPEC</b>	China-Pakistan Economic Corridor
<b>DFIs</b>	development finance institutions
<b>GoP</b>	Government of Pakistan
<b>IMF</b>	International Monetary Fund
<b>PSE</b>	Public Sector Enterprise
<b>SBP</b>	State Bank of Pakistan
<b>SECP</b>	Securities and Exchange Commission of Pakistan
<b>NEPRA</b>	National Electricity Power Regulatory Authority
<b>AEDB</b>	Alternative Energy Development Board
<b>LoS</b>	Letter of Support
<b>SPV</b>	Special Purpose Vehicle
<b>PCOA</b>	Put and Call Option Agreement
<b>IPPs</b>	Independent Power Producers
<b>EGRE</b>	European Guarantee for Renewable Energy
<b>AFD</b>	French Development Agency
<b>KFW</b>	German Development Bank
<b>CDP</b>	Italian Financial Institution
<b>EIB</b>	European Investment Bank
<b>WAPDA</b>	Water and Power Development Authority
<b>PPP</b>	Public Private Partnerships
<b>PPPP</b>	Philanthropic Public Private Partnership
<b>ESG</b>	Environmental, Social, Governance
<b>P2P</b>	Peer to Peer
<b>GSSS</b>	Green, Social, Sustainable, and Sustainability
<b>InviTs</b>	Infrastructure Investment Trust
<b>MCPP</b>	Managed Co-Lending Portfolio Program
<b>MIGA</b>	Multilateral Investment Guarantee Agency
<b>GCF</b>	Green Climate Fund

# Preface

Currently, Pakistan relies on solar and wind energy sources for 6% of its total power production capacity. However, the goal is to increase this to 20% by 2025 and further to 30% by 2030, as outlined in the 2019's Alternate and Renewable Energy Policy (ARE 2019 Policy). According to the approved Integrated Generation Capacity Expansion Plan (IGCEP 2022), an annual roadmap for new capacity additions, an additional 21 GW of wind and solar power will need to be introduced by 2031 to meet the national demand in a cost-efficient manner. Achieving this target would require a substantial investment influx of approximately USD 52 billion. Most of this investment needs to be mobilized towards renewables which would make up 30% of total capacity in 2031.

However, due to the government's limited capacity to raise the requisite amount, it is crucial to mobilize private sector investments to meet the financing targets for integrating renewable energy. To facilitate informed decision-making, it is imperative to thoroughly map out the current investment landscape of renewable energy in Pakistan. Additionally, it is crucial to consider the overarching regulatory framework, regulators, and key stakeholders to derive meaningful insights from this mapping exercise.

This report provides a comprehensive overview of renewable energy investments in Pakistan. It examines the key stakeholders involved and the existing regulatory framework that supports the sector. Furthermore, the report highlights the major challenges faced in attracting additional investments and proposes innovative financial instruments that can be utilized to address these challenges.

The database used in this report is updated through December 2023. Any projects or financial commitments made after this date are not included in the results presented.



## Executive Summary

In 2023, global investments in the energy transition confronted significant macroeconomic, geopolitical, and supply chain challenges, achieving a remarkable 17% growth to reach USD 1.8 trillion. Renewable energy emerged as the primary beneficiary, capturing 35% of total energy transition investments. Solar photovoltaic (PV) systems, offshore wind, and onshore wind power projects were the primary recipients, together accounting for over 95% of renewable energy investments. However, despite these positive developments, the current investment pace falls short of the level required to achieve the 1.5°C Scenario by 2030, as outlined by the International Renewable Energy Agency (IRENA). Meeting this target requires annual investments to quadruple to over USD 5 trillion.

In Pakistan, the renewable energy sector has cumulatively secured USD 4.6 billion in financing for utility-scale solar and wind projects. A significant portion, around USD 1.4 billion, was invested in 2015 alone. However, progress stalled in subsequent years due to policy uncertainties and a shift in focus toward coal-based power projects, which undermined investor confidence. Despite the slowdown in investment, the average cost of constructing utility-scale renewable projects in Pakistan has decreased by more than 50%.

The financing landscape in Pakistan involves a diverse mix of commercial banks, development agencies, private equity, and institutional investors. Initiatives such as the Green Bond issuance by WAPDA and concessional loans from the State Bank of Pakistan have effectively mobilized capital and reduced financing costs, though further measures are needed to maintain accessibility. Overall, substantial capital flow remains constrained by regulatory challenges and limited sovereign fiscal space.

The projects are predominantly financed by multilateral and bilateral development financial institutions, including the Netherlands Development Finance Company (FMO), International Finance Corporation (IFC), China Development Bank (CDB), German Investment Corporation (DEG), Asian Development Bank (ADB), United States International Development Finance Corporation (DFC), and the French Development Agency's private sector arm (PROPARCO). These projects heavily rely on foreign lending due to high local interest rates, with foreign debt accounting for 55% of the total investment portfolio. Among local lenders, Bank Al-Habib, Habib Bank, and Meezan Bank have been particularly active in financing solar and wind projects.

Primary ownership and investment have been notably driven by major industrial and textile conglomerates. Significant interest has come from companies such as Gul Ahmed, Metro, Orient, Sapphire, ACT, and United Energy Group. There is a significant gap in guarantee provision, with only a limited number of institutions capable of offering these financial assurances, which is a major bottleneck for securing large-scale financing.

The predominant challenges in scaling up renewable energy finance in Pakistan include the limited absorption capacity of emerging market investments, regulatory hurdles, and the need for enhanced guaranteed mechanisms. Moreover, there's a critical need to enhance the participation of private capital and institutional investors through improved regulatory frameworks and the introduction of risk-mitigating financial instruments.

A diverse array of innovative financial instruments for Pakistan's renewable energy sector can provide the much-needed impetus. Islamic financing, particularly green sukuk, and alternatives to sovereign guarantees like Put and Call Option Agreements (PCOA) and regional guarantee forums, can enhance investor confidence and private sector participation without additional fiscal burdens. Green bonds, exemplified by WAPDA's Indus bond, show significant potential for attracting dedicated financing for renewable projects.

Public-Private Partnerships (PPPs), Philanthropic-Public-Private Partnerships (PPPPs), and innovative investment vehicles can mobilize large-scale funds for renewable energy projects, diversifying Pakistan's energy mix. Unlocking private capital from institutional investors requires regulatory reforms and instruments like Green, Social, Sustainable, and Sustainability-linked (GSSS) bonds. Project aggregation, securitization vehicles, and co-lending approaches can address financing challenges for small developers, creating investment-grade portfolios for larger investors. Open banking, climate fintech innovations, and debt swaps linked to environmental goals can further democratize access to capital and enhance fiscal stability, paving the way for a sustainable and resilient energy future.



## Key Insights

### Global Investment Surge

In 2023, energy transition investments grew by 17%, reaching USD 1.8 trillion, with a strong emphasis on renewable energy. Despite this growth, achieving the 1.5°C Scenario by 2030 requires a fourfold increase in annual investments to over USD 5 trillion.

### Pakistan's Renewable Financing

Pakistan's renewable energy sector has secured USD 4.6 billion in cumulative financing. Due to high local interest rates, the sector heavily relies on foreign debt, which constitutes 55% of the total investment portfolio.

### Regulatory and Financial Challenges

The flow of substantial capital into renewable projects in Pakistan is hindered by regulatory constraints, limited sovereign fiscal space, and a lack of financial guarantees. These challenges prevent optimal engagement from commercial banks in renewable energy investments.

### Role of Private Equity and Institutional Investors

Large-scale renewable projects in Pakistan are primarily managed by major Pakistani conglomerates and Chinese firms, with significant debt financing from international financial institutions. However, a critical bottleneck exists due to the scarcity of institutions capable of offering financial guarantees.

### Need for Innovative Financial Instruments

To overcome sector-specific challenges and enhance funding avenues, there is a pressing need for innovative financial instruments such as concessional loans, Islamic financing, green bonds, and public-private partnerships. Improving regulatory frameworks and introducing risk-mitigating financial instruments are crucial to boosting participation from private capital and institutional investors.

## Global Investment Trends

In 2023, despite significant macroeconomic, geopolitical, and supply chain challenges, global investments in energy transition experienced a remarkable 17% growth, reaching an impressive USD 1.8 trillion. Renewable Energy stands out as the primary beneficiary, receiving 35% of the total investments in energy transition. Among these technologies, solar photovoltaic (PV) systems, as well as offshore and onshore wind power projects, take center stage as the key recipients of investment commitments. In fact, these three categories alone capture over 95% of the total investments allocated to renewable energy, highlighting their prominence and appeal to investors. [1]

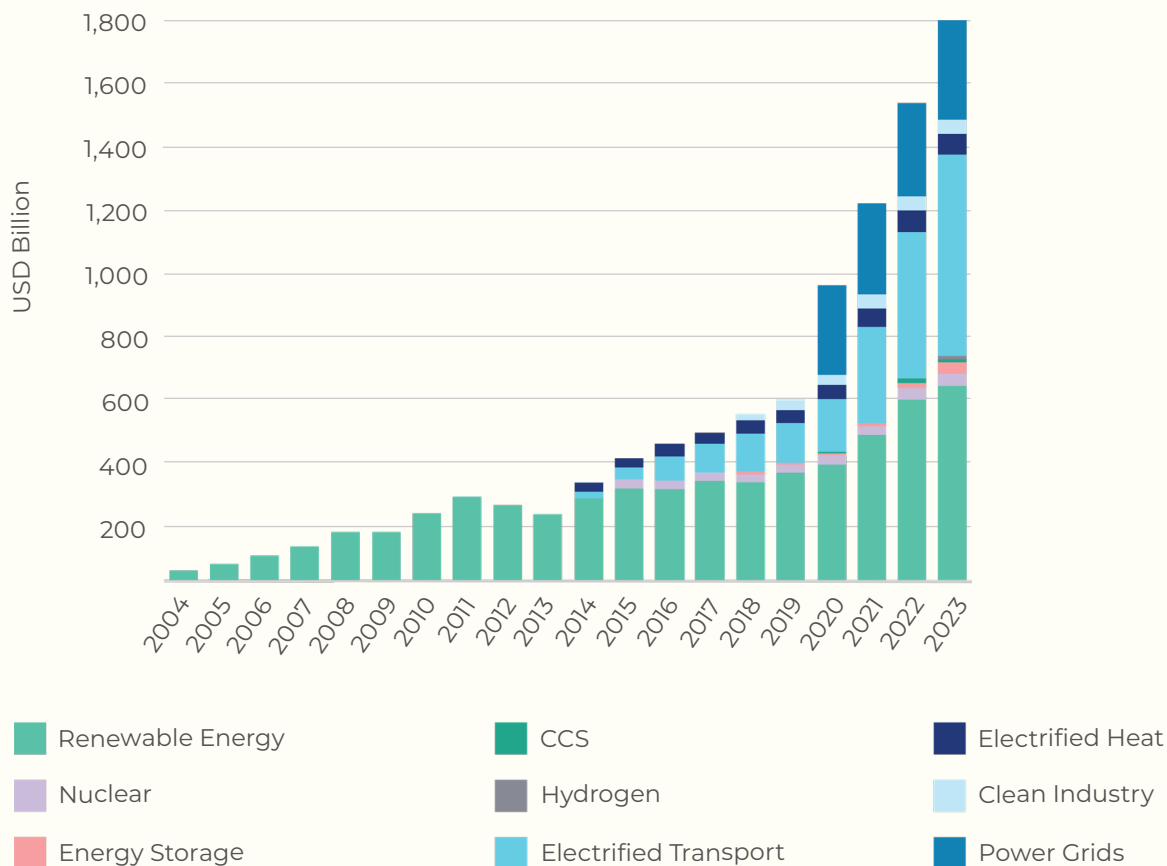


Figure 1 - Annual global investment in energy transition technologies [2]

Despite huge investments, emerging and developing markets mobilize just a fraction of the total funding even after having a considerable need to expand their energy transition efforts. Except for China, spending on clean energy in emerging market has been relatively flat over the past few years averaging at around USD 260 billion per year. [3]

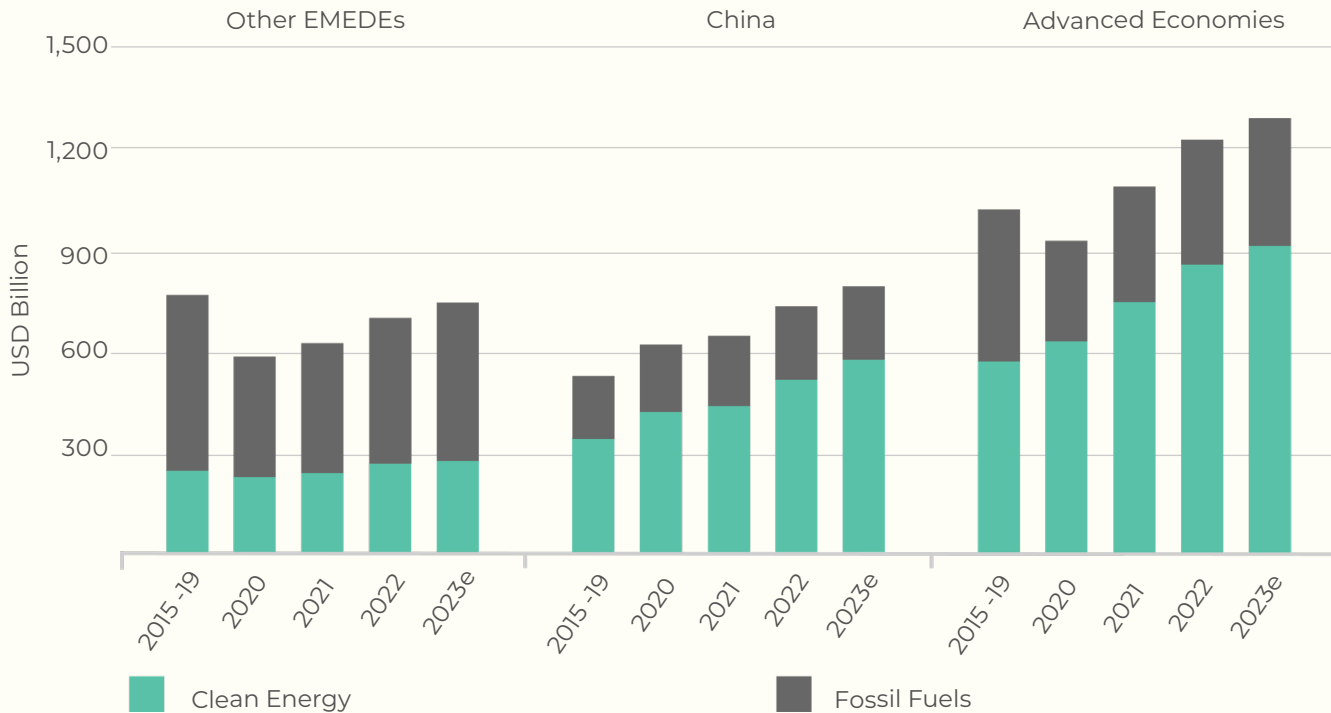
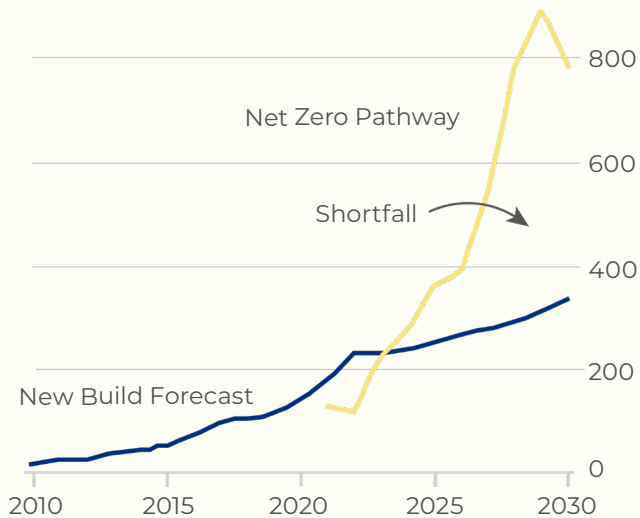


Figure 2 - Comparison of global energy investments in EMDEs vs advanced economies [3]

The current rate of global investments in renewable energy falls significantly short of what is necessary to stay on course towards achieving the energy transition aligned with the 1.5°C Scenario outlined in International Renewable Energy Agency (IRENA)'s World Energy Transitions Outlook 2023. It is estimated that to meet this 1.5°C target, average annual investments of over USD 5 trillion will be required between 2023 and 2030 i.e., annual investments need to at least triple to finance the shortfall in renewable energy capacity. To accomplish such a momentous energy transition, a fundamental redirection of funds is imperative. Specifically, an annual shift of USD 1 trillion from fossil fuel investments to energy-transition-related technologies is needed. Unfortunately, despite this urgent call, investments in fossil fuels continue to rise, posing a challenge to the necessary redirection of resources towards sustainable alternatives.[4], [6]

### Solar and wind capacity falls short of 2030 net zero target

#### Solar



#### Wind

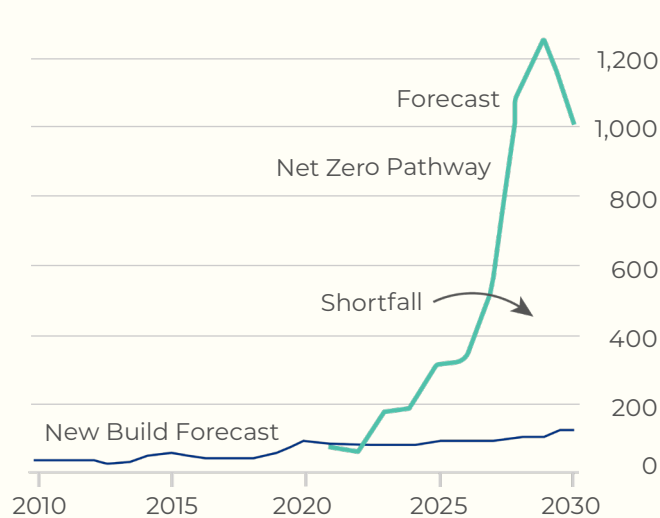
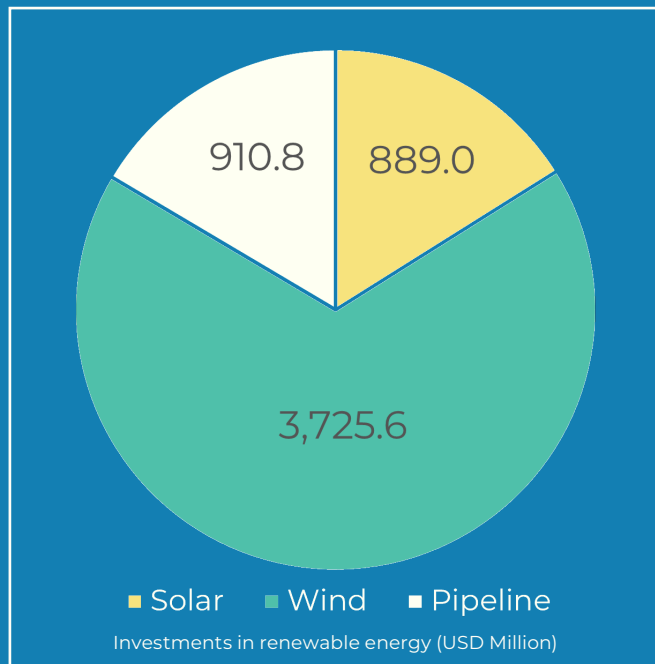
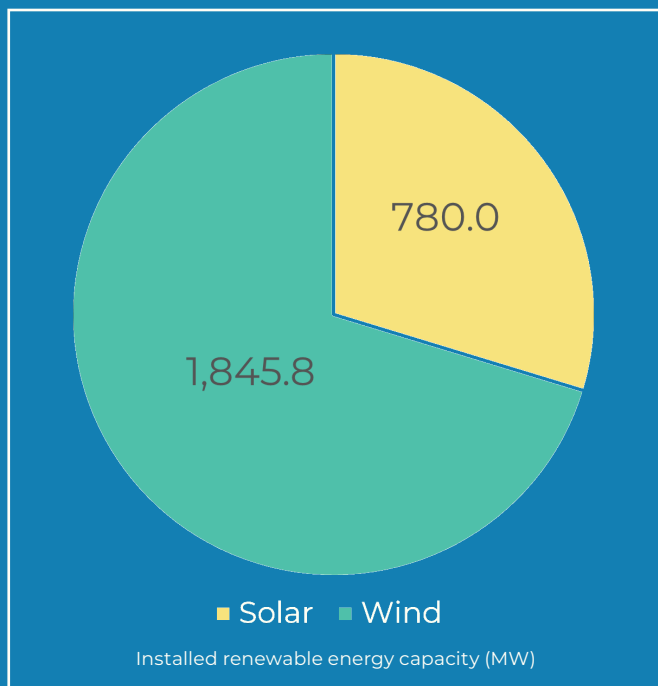


Figure 3 - World new build forecast (GW)[5]

# Pakistan Renewable Energy Finance

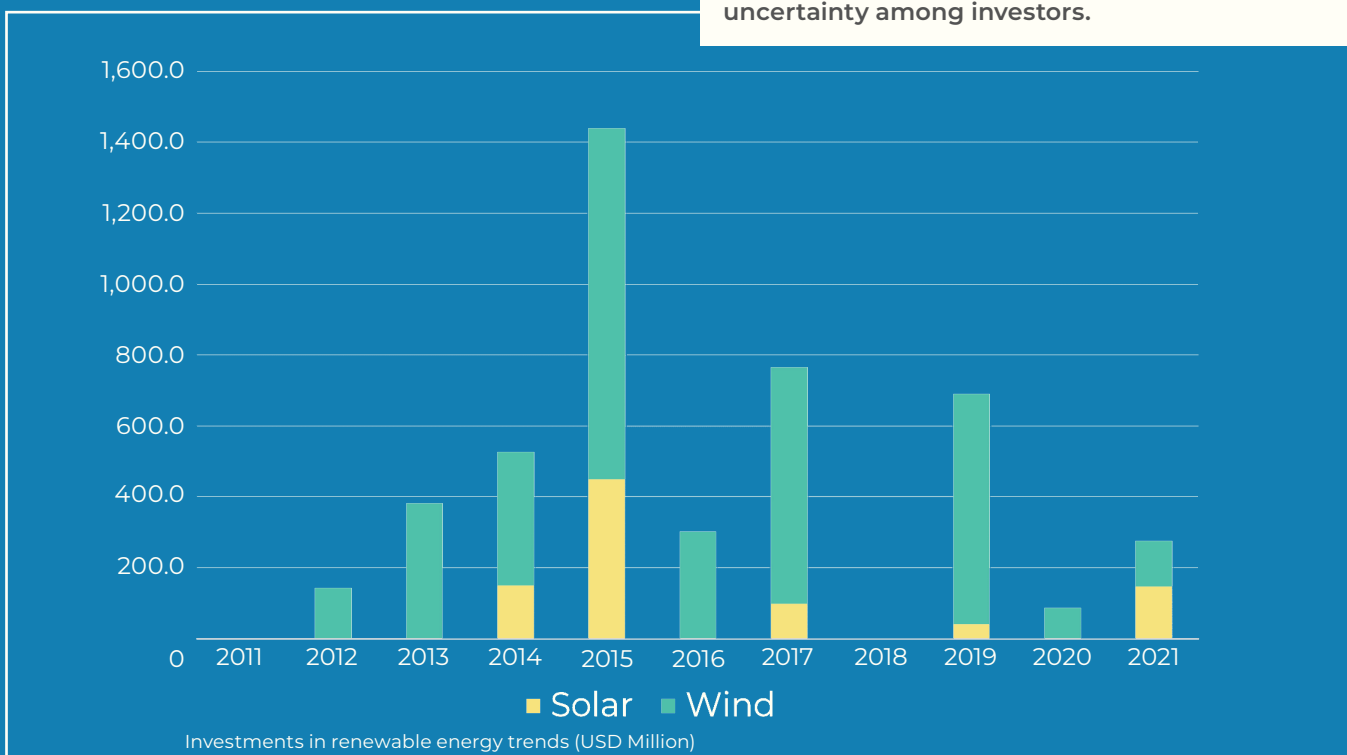
In the realm of Renewable Energy, Pakistan witnessed substantial development over the past decade. Despite the presence of robust pipelines with projects of more than triple our current installed capacity, the policy, regulatory, and macroeconomic challenges (discussed later in the report) have a deleterious impact on the solar and wind market.

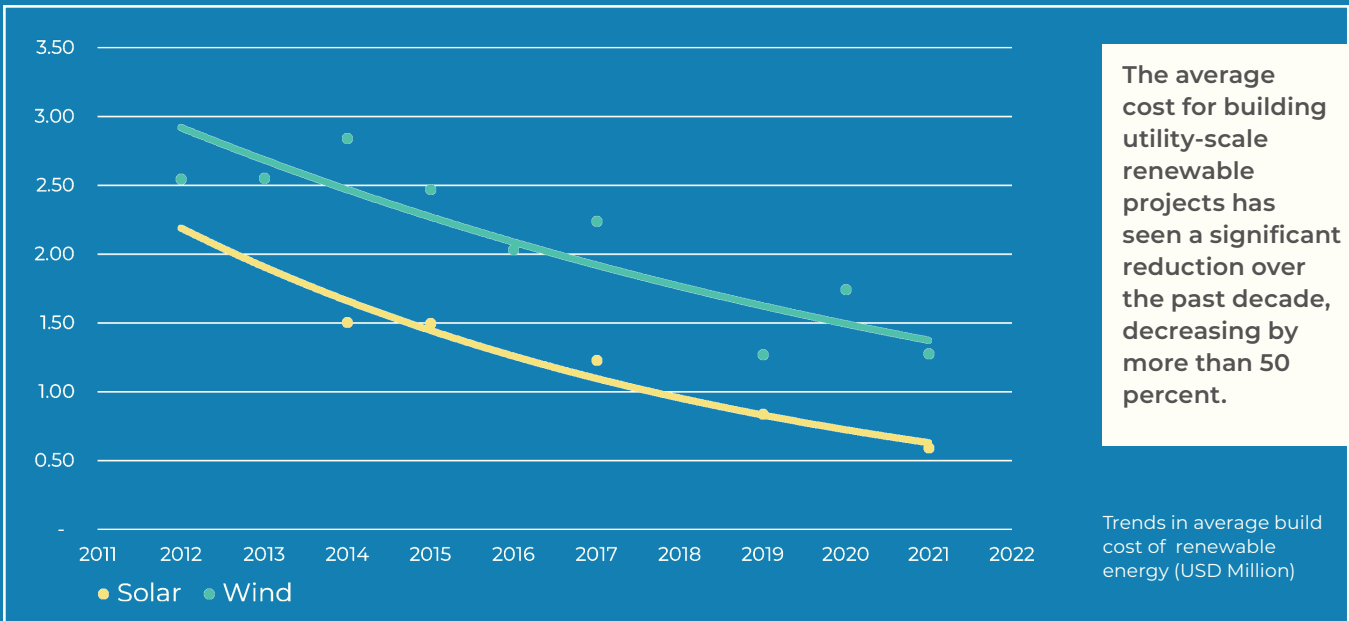
Pakistan currently has 2,625 MW of solar and wind installed capacity, whereby 70 percent of the capacity pertains to wind power plants in Jhimpir Charo Corridor. In addition to this, there are ongoing projects amounting to 560 MW for solar energy and 2,330 MW for wind energy, all of which are in various stages of development.



The renewable energy sector has cumulatively received USD 4.6 billion in financing for utility-scale solar and wind projects

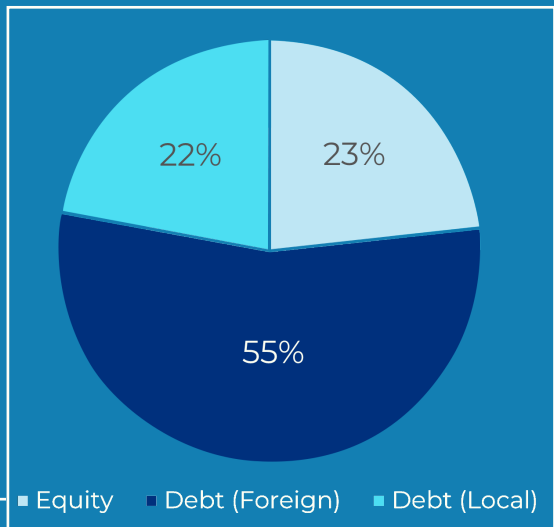
In 2015 alone, investments of around USD 1.4 billion were made in utility-scale solar and wind projects. However, this progress was later hindered by a period of stagnation and inactivity, mainly attributed to dwindling policies that created uncertainty among investors.





### Prominent Sponsors

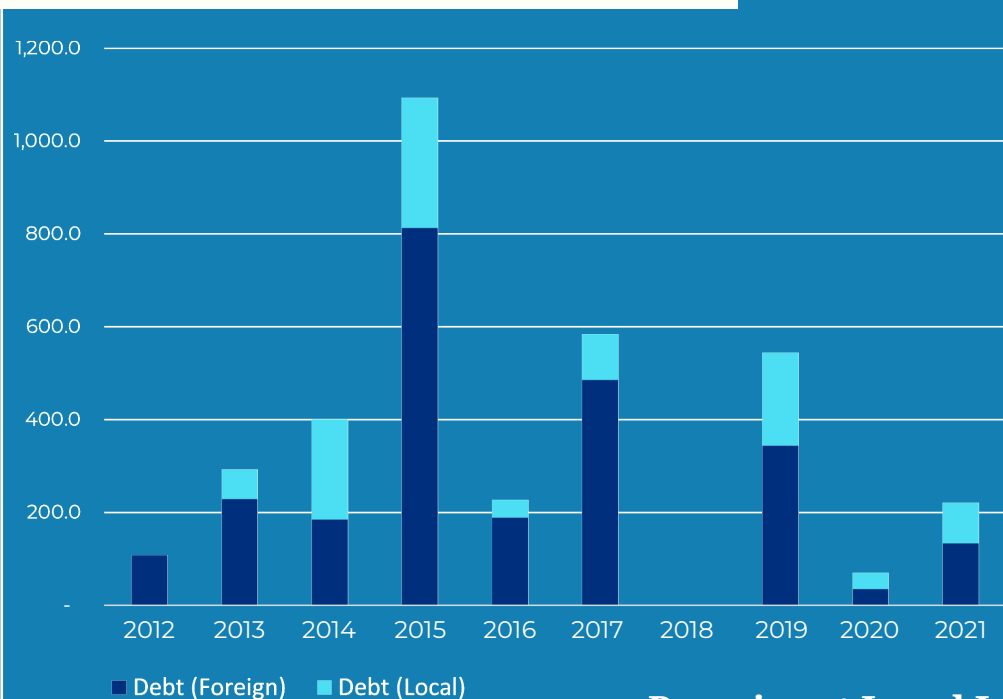
- United Energy Group Co.
- China Three Gorges, South Asia Investment Ltd
- Zenergy Company Limited
- Gul Ahmed, & Metro
- Orient Group Investment Holdings Co. Ltd.
- Sapphire Group
- ACT Group
- Lucky & Yunus Energy
- Liberty



Projects follow debt-to-equity ratio of either 80:20 or 75:25. Additionally, these projects exhibit significant reliance on foreign lending due to high local interest rates, with foreign debt accounting for 55 % of the total project costs for renewables.

### Prominent Foreign Lenders

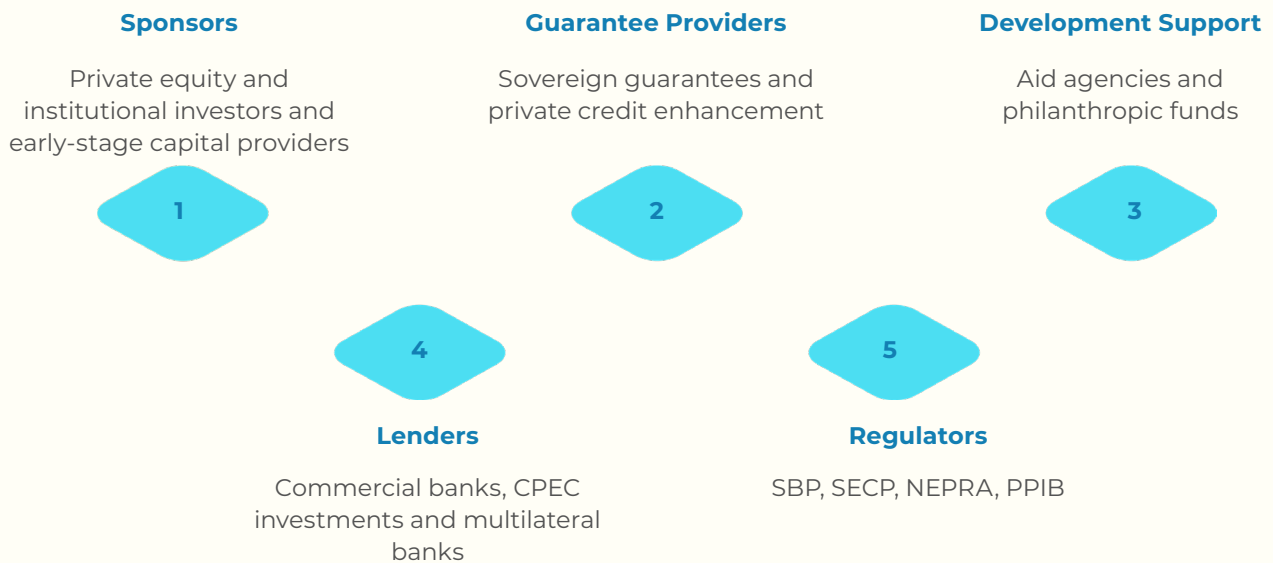
- Asian Development Bank (ADB)
- International Finance Corporation (IFC)
- Islamic Development Bank (IDB)
- Dutch Entrepreneurial Development Bank (FMO)
- DEG (German Investment Corporation)
- China Development Bank (CDB)
- AFD/ Proparco



**Prominent Local Lenders:** Bank Al Habib, Bank Alfalah, Habib Bank Limited, Meezan Bank, National Bank of Pakistan, JS Bank

## Key Stakeholders

The renewables financing landscape involves various stakeholders, each fulfilling distinct roles, such as project sponsors, lenders, guarantee providers, regulators, and development agencies. Within the renewable energy market in Pakistan, there exist adequate participants across each stakeholder category, except for guarantee providers.



## Sponsors

### Private equity and Institutional investors

Private equity investors are increasingly becoming prominent in Pakistan due to their capacity to manage large infrastructure projects. Their capacity to secure substantial financing based on robust balance sheets elevates their role in the renewable energy sector, with key players emerging from diverse verticals including textiles, conglomerates, and overseas investors. Orient Group, ACT Group, Metro Group, Gul Ahmed Group and Sapphire Textile remain the biggest players in terms of investment size. Additionally, stands out as a major stakeholder in wind power projects.



### Early-stage capital providers e.g. venture capital or angel investors

Pakistan has witnessed a substantial growth in Venture Capital and Angel Investor funding in various sectors. The holy trinity of the startup ecosystem: ecommerce, FinTech and logistics take the lion's share of almost three-quarters of early-stage funding.[7] This leaves behind a limited number of funds focused on renewable energy specifically in the distributed generation vertical. Among notable Venture Capital and Impact Funds, Acumen has made equity investments in solar EPC companies like Nizam Energy and SRE Solutions, providing them with essential seed funding. It is also seeking new investment opportunities in the Energy Agriculture Nexus with the launch of USD 80 million Acumen Climate Action Pakistan (ACAP) fund, presenting a potential avenue for emerging clean energy technologies in agriculture sector.

Figure 4 - Construction phase of metro wind power project

## Lenders

### Commercial Banks

Commercial banks and investment banks play a vital role as intermediaries for the flow of capital in the renewable energy sector. Their understanding of the market dynamics and business perspectives is crucial in facilitating the decarbonization of the economy. Leading banks, including Habib Bank Limited (HBL), United Bank Limited (UBL), Muslim Commercial Bank (MCB), Jahangir Siddiqui (JS) Bank, and the National Bank of Pakistan (NBP), among others, have been identified as key partners in this endeavor. HBL, being one of the country's largest financial institutions, has made significant investments in renewable energy and was part of the consortium that executed Pakistan's only Green Bond issuance in 2021.

JS Bank stands out as the country's only bank accredited by the Green Climate Fund (GCF), although its portfolio in mainstream project finance transactions remains relatively small. It is currently executing Pakistan Distributed Solar Energy Project which will bridge financing gap for distributed solar PV products through tailored financing instruments. It will mobilize a guarantee facility by GCF to finance 43 MW solar PV installations for households, agribusinesses and small and medium enterprises (SMEs).

Furthermore, several commercial banks offer specialized products and financing schemes tailored to consumers, particularly in the commercial and residential sectors. These schemes aim to facilitate renewable energy financing for businesses and individuals and promote the adoption of clean energy solutions. Some of these schemes are listed below:

Banks	Scheme	Facility Parameters	Project Type / Size
Bank Al Habib	SBP Financing Scheme for Renewable Energy Category II Source: <a href="https://www.sbp.org.pk/Incen-others/Rene.asp">https://www.sbp.org.pk/Incen-others/Rene.asp</a>	Domestic, agricultural, commercial & industrial borrowers Duration: 10 years (3 months' grace period) Mark-up @ 6% per annum Cap @ PKR 400 million	Category II: Up to 1 MW RE Projects
Bank of Punjab	SBP Financing Scheme for Renewable Energy Source: <a href="https://www.sbp.org.pk/Incen-others/Rene.asp">https://www.sbp.org.pk/Incen-others/Rene.asp</a>	Finance Facility of up to PKR 25 million for SEs and up to PKR 200 million for MEs & above Duration: Up to 10 years Mark-up @ 6% per annum	4 – 1000 kW solar projects
	BoP Shamsi Tawanai Source: <a href="https://www.bop.com.pk/BOPShamsiTawanai">https://www.bop.com.pk/BOPShamsiTawanai</a>	Duration: Up to 8 years (3 months' grace period) Mark-up as per prevailing market rates Cap @ PKR 100 million	
	BOP Solar Source: <a href="https://www.bop.com.pk/BOP%20Solar">https://www.bop.com.pk/BOP%20Solar</a>	Duration: Up to 7 years (3 months grace period) Cap @ PKR 5 million	Residential systems

Banks	Scheme	Facility Parameters	Project Type / Size
JS Bank	JS Smart Roshni Solar Panel Financing Source: <a href="https://jsbl.com/business/sme/js-smart-roshni-solar-panel-financing/">https://jsbl.com/business/sme/js-smart-roshni-solar-panel-financing/</a>	Duration: 3-7 years Mark-up @ 6% per annum Cap @ PKR 10 million	Commercial and industrial Systems
	JS Char Apna Solar Solution Source: <a href="https://jsbl.com/business/sme/js-gharapna-solar-panel-financing/">https://jsbl.com/business/sme/js-gharapna-solar-panel-financing/</a>	Duration: 3-5 years Mark-up @ 6% per annum Cap @ PKR 3.5 million	Residential and commercial
	JS Zarkhez Solar Tube well Finance Source: <a href="https://jsbl.com/business/agriculture-finance/js-zarkhez-solar-tubewell-finance/">https://jsbl.com/business/agriculture-finance/js-zarkhez-solar-tubewell-finance/</a>	Duration: 3-7 years Mark-up @ 6% per annum Cap @ PKR 2.5 million	Solar tube wells
Meezan Bank	Meezan Solar Source: <a href="https://instaenergy.net/solar-finance/">https://instaenergy.net/solar-finance/</a>	Duration: 1-5 years Mark-up @ 6% per annum Cap @ PKR 2 million	From 1KW up to 1000KW solar systems
Allied Bank	Allied Aabayari Source: <a href="https://www.abl.com/business-banking/agriculture-financing/agriculture-financing-products/allied-aabayari/">https://www.abl.com/business-banking/agriculture-financing/agriculture-financing-products/allied-aabayari/</a>	Duration: up to 10 years	Solar Irrigation Systems
Bank Alfalah	Alfalah Green Energy Source: <a href="https://instaenergy.net/solar-finance/">https://instaenergy.net/solar-finance/</a>	Duration: Up to 5 years Mark-up @6% per annum Cap @ PKR 400 million	Residential, commercial, SME and agri businesses
Faisal Bank	Faysal Islami Solar Solutions Source: <a href="https://www.faysalbank.com/en/islamic/faysal-islami-solar-solutions/">https://www.faysalbank.com/en/islamic/faysal-islami-solar-solutions/</a>	Duration: 1-7 years Mark-up @6% per annum Cap @ PKR 3 million	4 KW to 20 KW solar systems
Habib Bank	Farm Irrigation Solutions Source: <a href="https://www.hbl.com/assets/documents/Investor_Day_-_Rural_Banking_and_Development_Finance.pdf">https://www.hbl.com/assets/documents/Investor_Day_-_Rural_Banking_and_Development_Finance.pdf</a>	Duration: 3-5 years Mark-up as per prevailing market rates Cap @ PKR 10 million	Solar tube wells
Soneri Bank	SBP Financing Scheme for Renewable Energy Source: <a href="https://www.soneribank.com/sbp-financing-schemes/">https://www.soneribank.com/sbp-financing-schemes/</a>	Duration: Up to 12 years Mark-up @6% per annum Cap @ PKR 6 billion	1 -50 MW Renewable Energy projects

## State Bank of Pakistan

State Bank of Pakistan (SBP) is central to the financing landscape surrounding renewables as it drives policy interventions e.g. SBP Financing Scheme for Renewable Energy. Its role is also crucial in addressing barriers, both



institutional and market-related, to incorporate innovative financing instruments such as green bonds and debt-to-swaps.

Since 2017, SBP Financing Scheme for Renewable Energy provides concessional financing to commercial banks for renewable energy projects in all sectors. This low-cost funding has been largely utilized by the cement sector, which is transitioning from coal usage to solar energy. While concessional financing has been successful for large energy users, the SME sector has not been a major beneficiary, due to a lack of capacity to fulfill lending requirements and limited interest from lenders.[8]



### Effective Support for Renewable Energy - A Blueprint for SBP

An intriguing success story of central bank of China - People's Bank of China (PBoC), could serve as a blueprint for SBP to aggressively support renewables on multiple fronts. PBoC has implemented various policies to facilitate and support green finance initiatives. It launched "Window guidance," which can be described as a form of benevolent compulsion used to direct commercial banks' lending volumes. Starting from 2006, green targets were incorporated into the window guidance to discourage lending to carbon-intensive industries. Although this policy initially operated on an informal basis, it effectively mainstreamed green finance practices throughout the country.

Building on this progress, the PBoC made significant advancements towards formalizing its sustainable finance policy, beginning in 2020. In 2018, it took the

decision to include green financial bonds as eligible collateral for its medium-term lending facility. This move led to a decrease in green bond yields, incentivizing increased investment in green projects and bolstering the market for green bonds.

Furthermore, in 2021, the PBoC launched the Carbon Emission Reduction Facility (CERF). This facility aims to provide targeted and discounted refinancing for loans in three key areas: clean energy, energy conservation, and environmental protection.

By actively formulating policies, integrating green bonds into its lending operations, and establishing specialized facilities like the CERF, the PBoC has laid a solid foundation for the growth and promotion of green finance in China. [9]

### Multilateral Development Banks

Multilateral banks are at the forefront in the development of the renewable energy sector, particularly as main lenders for wind power projects. Notably, the International Finance Corporation (IFC) has been a key player. It offers senior debt with extended repayment periods, either at fixed or floating interest rates, in local currencies, and with flexible repayment schedules. Additionally, it also provides subordinated debt that is specifically tailored to meet the unique requirements of each project.[10] In the renewables space, IFC's has extended support to multiple projects including financing the "Super Six" projects, which have been developed by ACT Group, Artistic Milliners (Private) Limited, Din Group, Gul Ahmed Group, and Younus Brothers Group.

<b>Location</b>	Jhimpir Wind Corridor, Thatta District, Sindh
<b>Total investment</b>	USD 450m
<b>Gearing ratio</b>	75:25
<b>Foreign lenders</b>	<ul style="list-style-type: none"> <li>• IFC</li> <li>• Deutsche Investitions- und Entwicklungsgesellschaft (DEG, part of KfW Group of Germany)</li> </ul>
<b>Domestic lenders</b>	<ul style="list-style-type: none"> <li>• Bank Alfalah Limited</li> <li>• Bank Al-Habib Limited</li> <li>• Meezan Bank Limited</li> </ul>
<b>IFC's contribution</b>	USD 86m
<b>Debt from other lenders</b>	US\$234m
<b>Financial Close</b>	November 15, 2019
<b>Combined Capacity</b>	310 MW
<b>Individual Capacity</b>	Five 50 MW farms and one 60 MW scheme
<b>Annual Energy Production</b>	1,000 GWh
<b>No. of companies awarded</b>	5
<b>Developers</b>	<ul style="list-style-type: none"> <li>• ACT Group</li> <li>• Artistic Milliners (Pvt.) Limited</li> <li>• Din Group</li> <li>• Gul Ahmed Group</li> </ul>

Figure 5 - Salient features of the super six projects [11]

Asian Development Bank (ADB) has also been actively involved in funding wind power projects. Some notable examples include the financing of Foundation Wind Energy, Tricon Boston Wind Energy, and Zorlu wind power projects. Additionally, Islamic Development Bank have financed projects by Foundation Wind Energy and Tricon Boston Consulting group.

## Bilateral Financial Institutions

It is worth noting that a significant portion of the debt market for renewable energy projects in Pakistan is dominated by foreign lenders including Bilateral Financial Institutions. Among bilateral agencies, FMO has maximum participation with a portfolio of 8 renewable energy projects. Other notable bilateral financial institutions include British International Investment (BII) – formerly Commonwealth Development Corporation (CDC), China Development Bank (CDB), US International Development Finance Corporation (DFC), Exim Bank China, Deutsche Investitions- und Entwicklungsgesellschaft (DEG), ECO Trade and Development Bank (ETDB), Industrial And Commercial Bank Of China (ICBC), and PROPARCO.

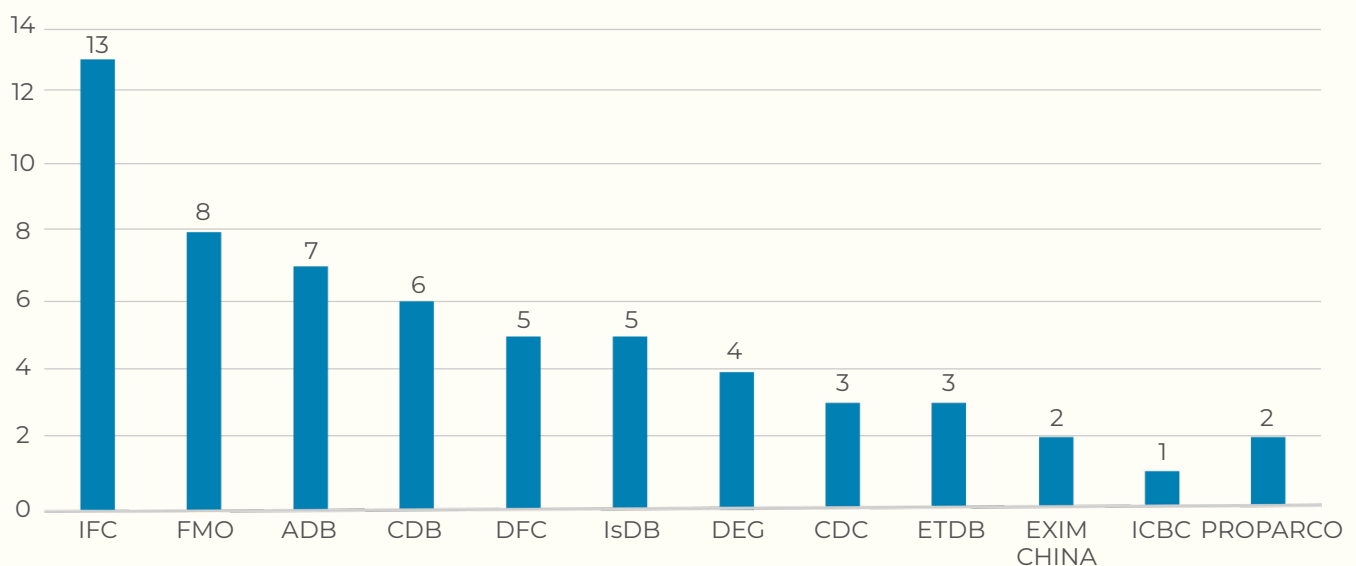


Figure 6 - Multilateral and bilateral financial institutions portfolio (number of projects)

The institutions are also active in supporting greater integration of renewables into the system. For instance, FMO and Proparco announced a USD 100 million syndicated facility to support K-Electric, the private power utility in the city of Karachi. The funding will support K-Electric in importing more electricity from the national grid, allowing better integration of renewable power, and improving the distribution network. [12]

## CPEC Investments

Chinese banks have been the driving force in financing Pakistan’s power sector under China-Pakistan Economic Corridor (CPEC), which has resulted in a substantial Chinese investment amounting to USD 27.4 billion, making up 40 percent of the total Chinese Development Finance in past two decades.[13]

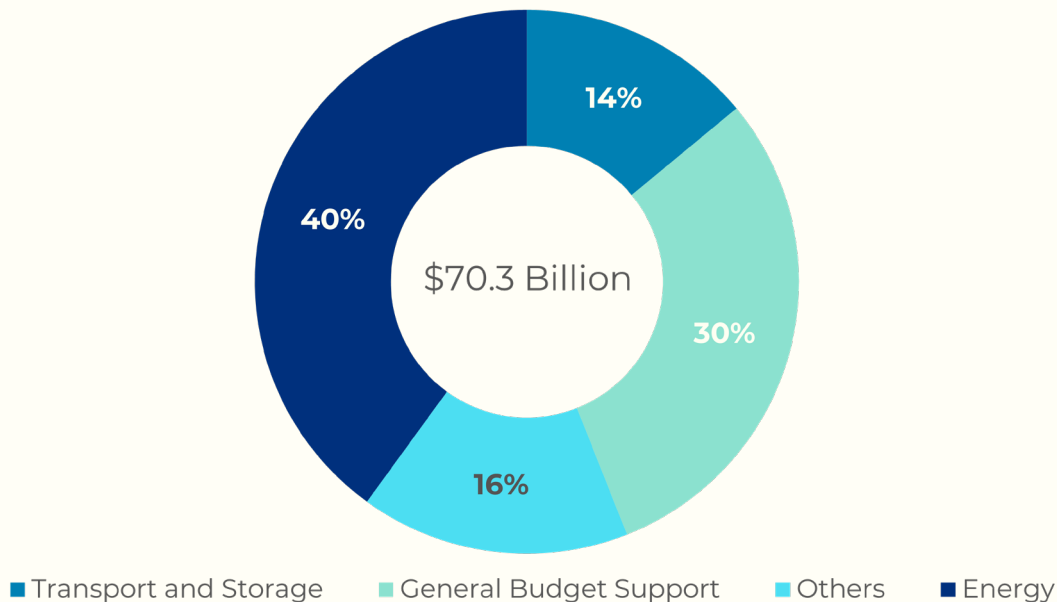
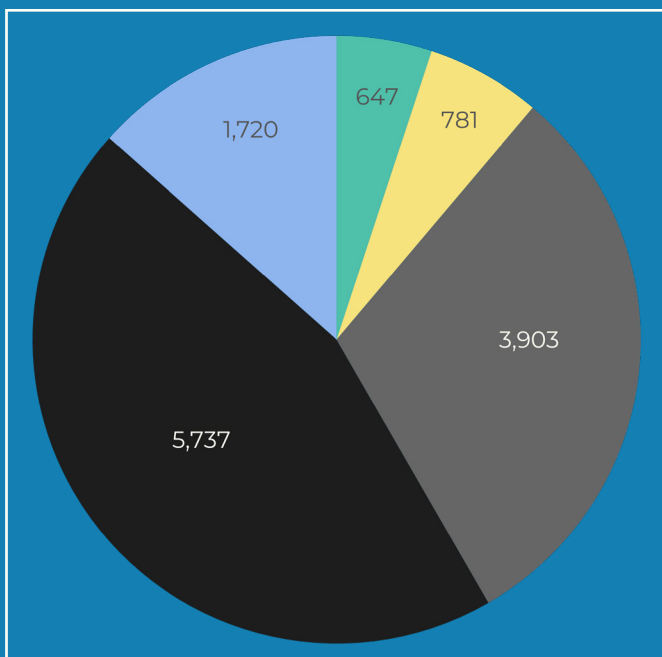


Figure 7 - Chinese development finance in Pakistan – sectoral distribution, 2000-2021 [13]

CPEC’s investments in the energy sector have added a total capacity of 8,220 MW to Pakistan’s grid via multiple power projects. Currently, five projects are still under development, which have a combined capacity of 4,328 MW and a total investment of USD 6 billion.[14]



■ Wind Power    ■ Solar    ■ Local Coal    ■ Imported Coal    ■ Hydro

Figure 8 - CPEC projects investment (USD Million)

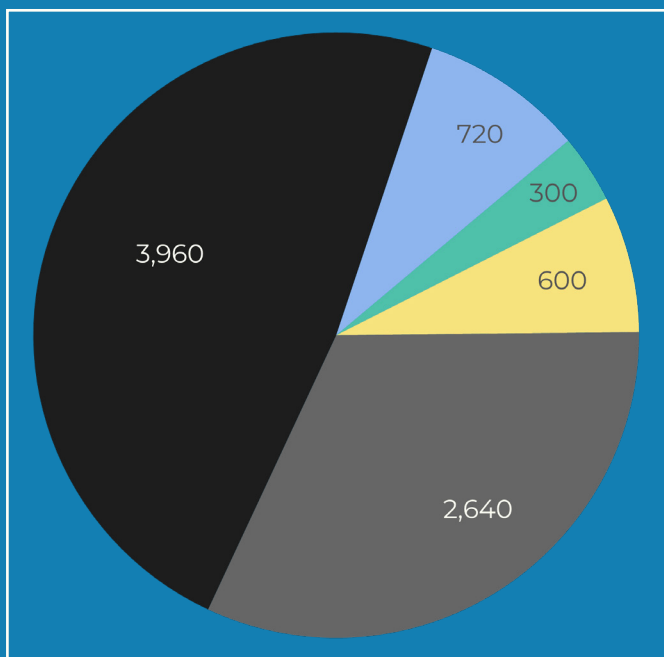


Figure 9 - CPEC projects capacity (MW)

During United Nations gathering in September 2021, President Xi Jinping declared China's intention to enhance assistance to fellow developing nations in advancing green and low-carbon energy solutions, while emphasizing China's commitment to refrain from establishing new coal-fired power plants on foreign soil. Subsequently, as per the China Overseas Finance Inventory, there have been no documented instances of new investments in coal-based power plants under the Belt and Road Initiative (BRI).[15]

China being the leader in renewable energy globally accounting for more than 30% of investments in solar as well as wind, will be a critical player for Pakistan to leverage. Hence China, as Pakistan's foremost financier in the power sector, is ideally placed to supercharge this transition. The investment in coal which increased exponentially under the first 10 years of CPEC will see no growth in the next 10 years, leaving larger Chinese investment prospectus for renewables, as shown in Figure 10 below.[16]

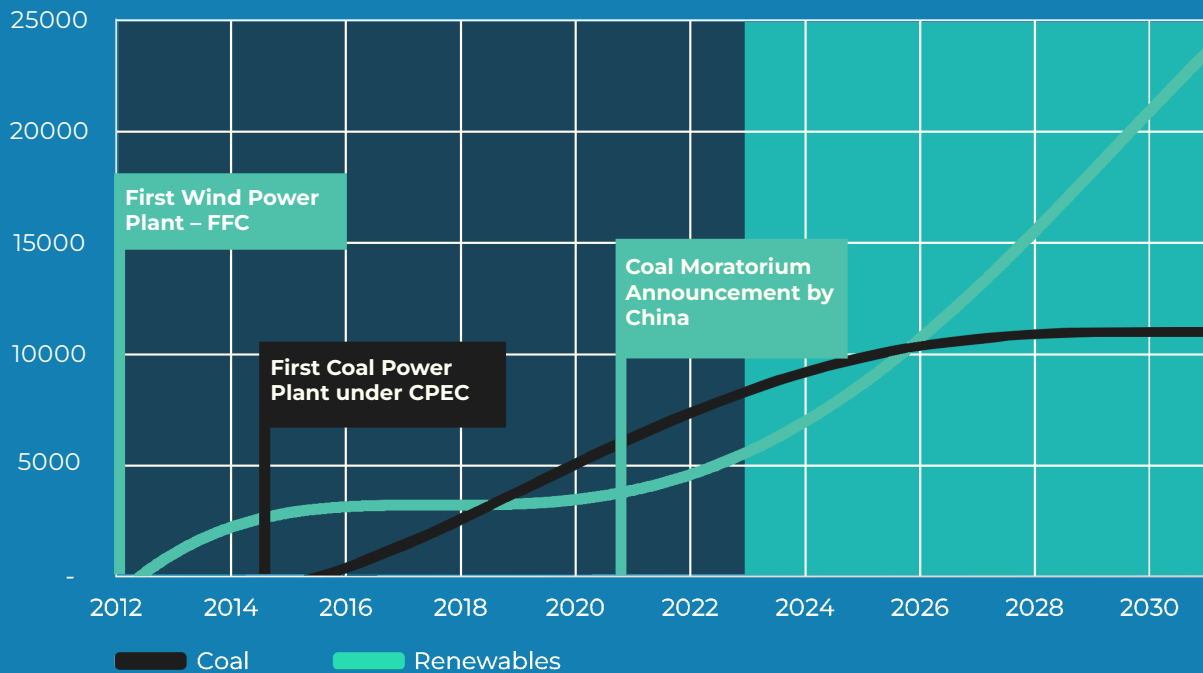


Figure 10 - Cumulative CPEC investment trends in renewables vs coal - normalized (USD Million)

## Guarantee Providers

Sovereign guarantees – long seen as essential to make renewables bankable – are increasingly hard to obtain. Pakistan already exhausted the quantum of guarantees that can be provided as per Fiscal Responsibility and Debt Limitation Act 2005, which primarily states that the Government of Pakistan (GoP) cannot provide sovereign guarantees exceeding 2% of GDP, in a year. By December 2023, the GoP has outstanding PKR 3.75 trillion of sovereign guarantee, hitting the limit as per the Act. Most of these guarantees are issued through Public Sector Enterprise (PSE). As we reach the limit to our guaranteed provisions, it would be crucial for the country to look for alternative sources for providing guarantees for renewable energy investments.[17]

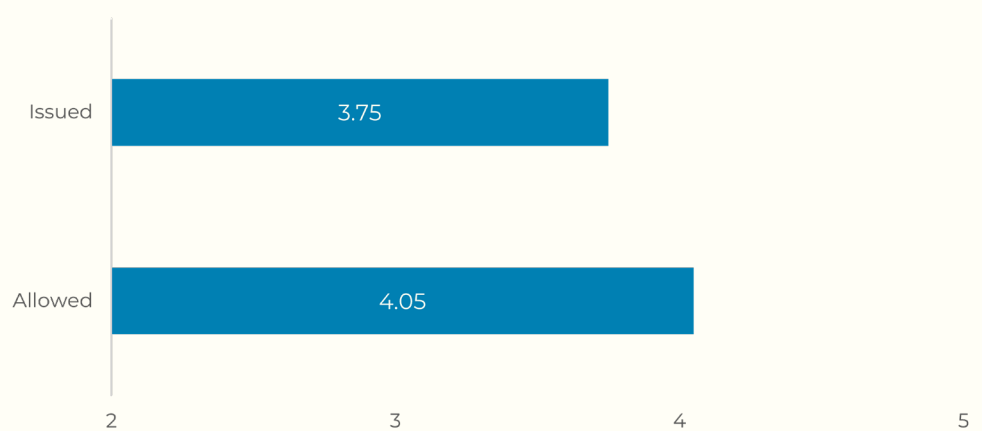


Figure 11 - Sovereign Guarantee Stocktake, December 2023 (PKR Trillion). Comparison of ceiling on government guarantees vs actual guarantee provided[18]

There is dearth of explicit guarantee providing institutions in Pakistan with only two notable institutions in the country—InfraZamin and GuarantCo. The latter is actively participating in the power sector by providing a Partial guarantee for a USD 50 million amortizing 5.5-year corporate term loan facility to K- Electric for its reduction in Transmission and Distribution (T&D) losses. It also holds PKR 4.125 billion (USD 25 million) of equity capital and an additional PKR 4.125 billion (USD 25 Million) of active contingent capital, bringing the total capital from its sponsors to PKR 8.25 billion (USD 50 million). It has the capability to leverage this total capital up to 10x, whereby significant quantum could be mobilized towards Renewable Energy sector.[19]

### Third Party Guarantees for Distributed Generation

GuarantCo has provided a 75 percent guarantee for the senior debt finance solution of PKR 1.5 billion (USD 5.2 million) from Bank Alfalah to Shams Power. This funding will assist in the construction of approximately 10 MW of solar projects across Pakistan.

Multilateral development banks also play a crucial role in enabling the guarantee mechanism. For example, ADB offered the guarantee facility under its Renewable Energy Development Sector Investment Program (REDSIP). The guarantee facility had a three-year availability period, which expired on December 14, 2013. The government provided a direct counter indemnity for the guarantee, with the aim of mobilizing long-term debt and equity from investors to support renewable energy projects. The REDSIP was specifically designed to encourage private sector investment in renewable energy. However, the success of this initiative remains limited.

## Regulators

### Government

The GoP controls the regulatory framework that governs renewable energy projects and financing in the country.

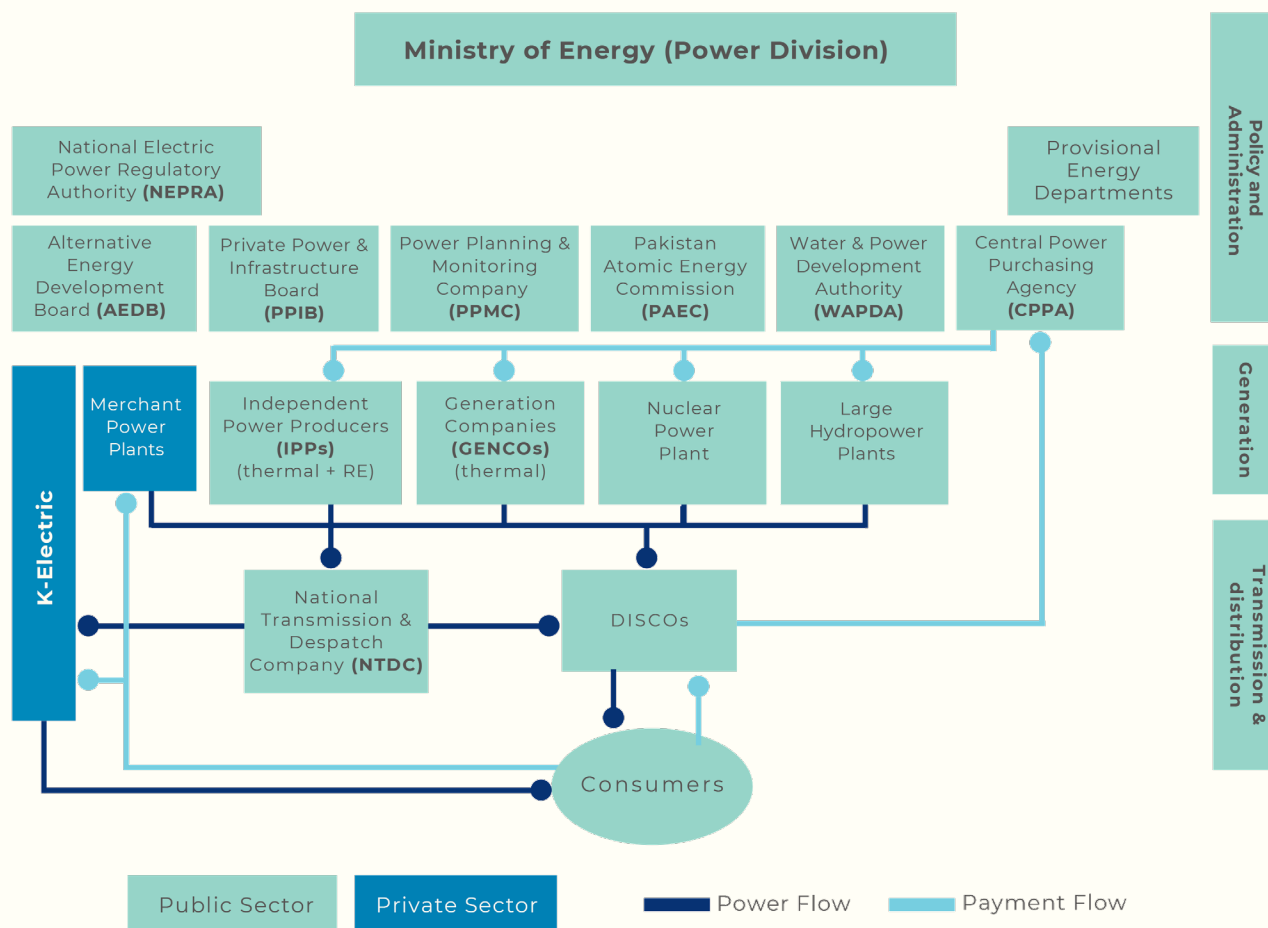


Figure 12 - Power sector governance framework

## Securities and Exchange Commission of Pakistan

Securities and Exchange Commission of Pakistan (SECP) is the regulatory authority responsible for overseeing the capital markets and corporate sector in Pakistan. One of the key functions of the SECP is to facilitate the issuance of new financial products in the capital markets like Green bonds. By regulating the issuance process and setting disclosure requirements, the SECP encourage domestic and international investors to participate in financing renewable energy projects in Pakistan. In June 2021, the SECP introduced guidelines for the issuance of Green bonds in Pakistan.



Additionally, the SECP plays a vital role in authorizing and regulating Islamic financial institutions for renewable energy. For instance, it recently approved the establishment of Burj Clean Energy Modaraba, which aims to facilitate the growth of Shariah-compliant clean energy financial products in the market. The Modaraba is expected to be listed in 2024, with a public offering of 30 million Modaraba

certificates, each priced at PKR 10 (30% of the total paid-up fund) out of a total paid-up fund of PKR 1 billion. The sponsors of the Modaraba are already engaged in preparatory and development activities. The Burj Energy International and DFC, have successfully developed and commissioned a 50 MW wind power plant in Jhimpir, District Thatta, Sindh, Pakistan, at a total cost of USD 126 million.[20]

To foster innovation in the financial sector, the SECP has also launched a Regulatory Sandbox, which provides a tailored regulatory environment for conducting limited-scale, live tests of innovative products, services, processes, and business models in a controlled setting for a specific period. The Regulatory Sandbox is particularly relevant for new products, services, or business models for renewable energy that are not adequately addressed under existing laws and regulations. For instance, Peer-to-Peer (P2P) renewable energy financing platform, crowd funding platforms for renewable energy, renewable energy asset backed securities, clean energy microfinance institutions or carbon credit exchange platforms.[21]

## National Electricity Power Regulatory Authority

Under the Regulation of Generation, Transmission, and Distribution of Electric Power Act, 1997, National Electric Power Regulatory Authority (NEPRA) has been designated as the exclusive regulator in Pakistan's power sector. Additionally, NEPRA oversees the auction process for renewable energy projects, including the approval of tender packages, documentation, taxation and indexation, bidding procedures, determination of end consumer tariffs, and the granting of licenses. NEPRA's involvement in accelerating renewable energy finance focuses on two key aspects:

### 1. Rationalized benchmark tariffs

NEPRA strives to establish benchmark tariffs that are attractive to the market. However, recent experiences indicate that there is room for improvement. In 2023, NEPRA set a benchmark tariff of 3.47 c/kWh for a 600 MW solar auction. Unfortunately, this tariff failed to attract any bids from local or international developers, despite multiple extensions to the procurement deadline.

### 2. Regulations for new financing instruments

NEPRA plays a vital role in facilitating the introduction of innovative financing instruments for renewable energy projects. This includes accommodating the costs associated with packaged products or third-party guarantee instruments used in project development. It is crucial for the regulator to consider the financial implications of these instruments and reflect them in the tariff structure and generation licenses.

## Alternative Energy Development Board (Merged with Pakistan Power and Infrastructure Board)

As the key government authority responsible for the development of the renewable energy market. The organization aims to develop a comprehensive national strategy, policies, and plans to promote the effective utilization of alternative and renewable energy resources. It functions as an Independent Auction Administrator and performs various other functions in the electric power market.



## Innovative Financing for Renewable Energy

A key challenge in the Pakistani market is the limited availability of private capital for renewable energy financing. Currently, there is a dearth of such funds in the country, with only a few notable players like CYAN Limited, Arif Habib, Lakson Investments, and AKD Securities among the institutional investors. However, prominent organizations such as Karandaaz (an FCDO investee company) and Acumen Pakistan have established a strong presence in the impact investment sector, but focusing primarily on distributed generation investments.

An extension of this issue is the limited accessibility of private equity for Small and Medium-Sized Enterprises (SMEs).[22] This poses a significant barrier to investment in smaller distributive energy projects, including microgrids. Ensuring greater availability of private equity for SMEs in the renewable energy sector will be crucial for fostering their growth and unlocking the full potential of distributed energy solutions in Pakistan. Early-stage investors including venture capitalists also remain hesitant to deploy significant capital in the domain due to the skewed risk return ratio.

At the institutional investor level, there is a lack of attractiveness in renewable energy projects. Major players such as mutual funds and insurance firms are hesitant to invest in this segment due to regulatory obstacles and the perceived high level of risk around liquidity of such projects.

Commercial banks have also limited their exposure to the sector. This can be attributed to their overall risk-averse approach, as well as their preference for lending from the federal government, which tends to crowd out private sector investment. Additionally, the concessional lending that has been implemented through various schemes primarily benefits a limited number of sectors and industrial groups, thus limiting the availability of funding for other deserving sectors, including renewables.

### Profiling SBP's \$7 billion worth of concessional lending portfolio

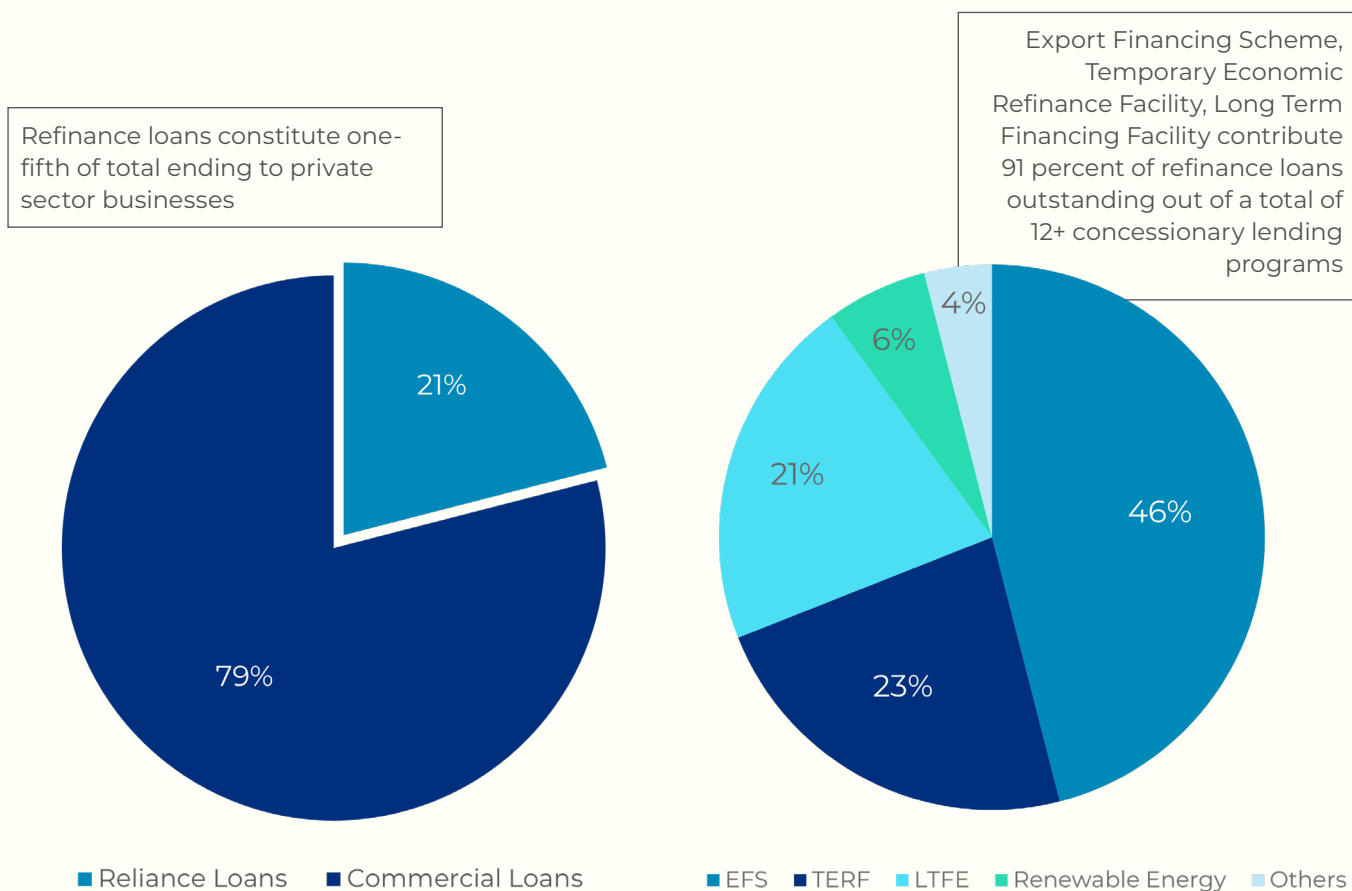


Figure 13 - Sectoral distribution of SBP's outstanding concessional lending portfolio as at dec 31, 2022 [23]

Innovative financial instruments are ways to attract new forms of capital towards sustainable development. Given the existing challenges, there are globally deployed innovative financial instruments and mechanisms that can serve as a roadmap for Pakistan to leverage additional financing for developing renewable energy projects.

## Concessional Loan

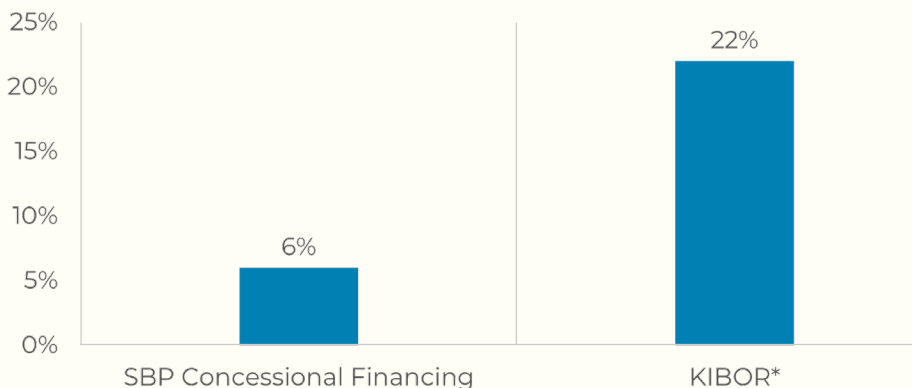


Figure 14 - Interest rate comparison for SBP RE financing scheme

\*As of dec, 2023

Concessional loans provide favorable loan terms, such as below-market interest rates, to stimulate economic activity in specific sectors. In 2016, the SBP introduced a Financing Scheme for Renewable Energy, aimed at making financing available for private sector consumers and developers to invest in renewable electricity generation. As of February 2022, the SBP has provided PKR 74 billion (approximately USD 400 million) in financing to over 1,175 projects, with

a combined capacity of 1,375 MW in renewable energy. Prospective sponsors can borrow up to PKR 6 billion (about USD 33 million) for a single renewable energy project for a period of 12 years, with a capped and fixed mark-up rate of 6% per annum. Overall, the scheme spurred a lot of development in the sector and led to increased investments in renewable energy. Moreover, it significantly lowered the levelized tariff by reducing the cost of financing, which is the single largest component of the tariff. However, driven by the current economic crises of the country, the scheme has been practically inaccessible due to monetary tightening measures in place, even though the scheme has been extended on paper until June 30, 2024.[24]

## Islamic Financing Instruments

The faith-based Islamic finance industry has grown to almost USD 3 trillion globally, and its focus on tangible assets offers strong potential to support climate action. Pakistan along with Iran, Bangladesh, Brunei Darussalam, Indonesia, and Malaysia are amongst the leading countries in the Islamic finance industry globally. The SBP recently reported that Islamic banking has reached 18.7% market share in the overall banking industry, which would qualify Pakistan as a fourth ADB member country with an Islamic banking sector of systemic importance as of the end of 2020. [25] Neelum Jehlum hydropower plant’s PKR 100 billion Sukuk issue marked one of the largest infrastructure deals in the country to use Islamic financing.

There is a need for broadening equity capital in energy and renewable energy investment through Islamic Finance. For green sukuk to follow the growth path of green bonds (which boomed from USD 5 billion in 2010 to more than USD 270 billion 10 years later), a mature market infrastructure and a diverse and strong investor pool is required. [26]

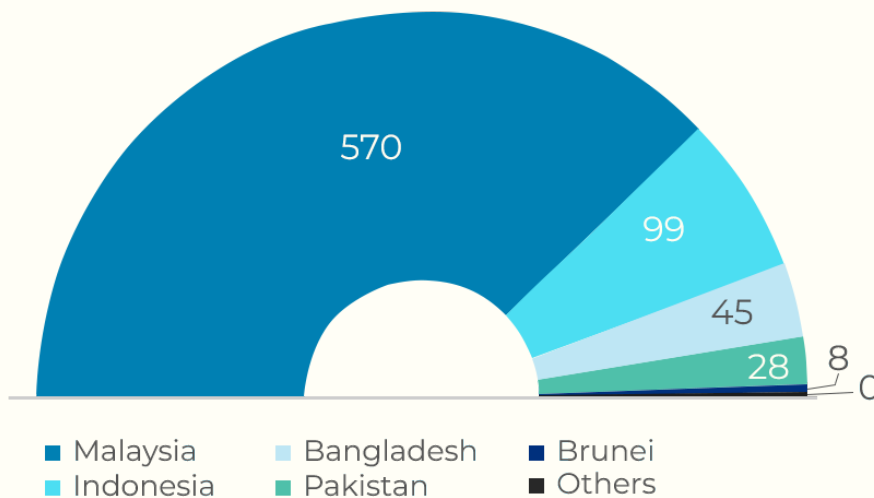


Figure 15 - Size of Islamic finance section in ADB member countries (USD Billion)



## Malaysia's success in Islamic banking through strategic Waqf utilization

Malaysia's Islamic banking benefits from a solid regulatory framework under the Islamic Financial Services Act (2013), which helps maintain consumer protection, proper licensing, and market conduct. Islamic banking makes up 41% of total banking loans as of 2022, with a well-established Sukuk market.

Strategic partnerships between the State Islamic Religious Council (SIRC) and Islamic banks have revitalized Waqf (Islamic endowment), directing its use towards impactful social projects such as entrepreneurship training for low-income individuals and construction of affordable housing. The Securities Commission launched a Waqf-featured fund framework in 2020, creating funds that contribute to charitable causes, with a collective gathering of MYR 46.7 million by 2022. Similar, Islamic finance instruments could help broaden capital market in Pakistan with the potential to direct towards renewable energy projects.[27]

## Alternatives to Sovereign Guarantees

The "one size fits all" solution that most financial institutions asked for in the past to deal with country risks was a "sovereign guarantee". In the renewable energy sector, sovereign guarantees are mostly used to attract investments in generation by Independent Power Producers (IPPs), in countries that suffer from a negative risk perception.

However, given Pakistan's current fiscal constraints and restrictions imposed by the IMF on extending additional sovereign guarantees, finding alternative solutions becomes necessary. Apart from private guaranteed mechanisms and credit enhancement facilities provided by multilateral institutions, following are some of the current alternatives to sovereign guarantees that exist globally:

### Put and Call Option Agreement (PCOA)

A PCOA replaces a termination clause in PPAs and transforms it into a commercial transaction. If the off-taker/government fails to meet its obligation, the IPP that has been wronged has the right to sell the whole project (SPV) at a price that is defined in the PPA. This way the government does not face debt but enters a commercial deal.

**Regional guarantee forums** Forums like European Guarantee for Renewable Energy (EGRE) provide partial risk offtake guarantees to power producers through a financial intermediary. The guarantees cover non-sovereign risk where no counter-guarantee from the host government is available. It is part of a European collaborative platform for guarantees jointly proposed by the French Development Agency (AFD), KfW (the German Development Bank), CDP (Italian Financial Institution), and EIB (the European Investment Bank). Similar regional forums could be developed in South Asia to spur development in the Renewable Energy sector.[28]

## Green Bonds

Green bonds are innovative financial instruments that combine conventional bond features with a clear, environmentally conscious focus, directing proceeds solely towards sustainable projects or initiatives. The green bond market can serve as an important bridge between providers of capital, such as institutional investors, and sustainable assets, like renewable energy. From a slow start in 2007, and a market driven primarily by multilateral development banks, green bonds have experienced impressive growth over the past decade. Globally, renewable energy is the leading recipient of green bond proceeds, but most green bonds finance multiple sustainable solutions. While progress to date has been impressive, there is still opportunity for further growth and improvement. Cumulative issuances of green bonds are still below 1% of cumulative global bond issuances.[29]

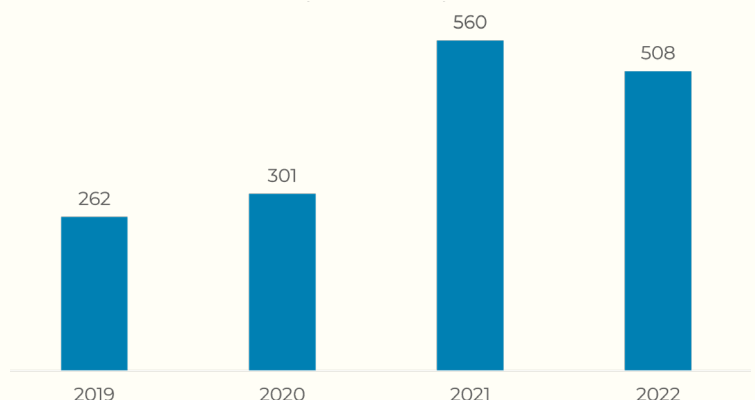


Figure 16 - Global Green Bond issuance (USD Billion) [30]

In May 2021, the Water and Power Development Authority (WAPDA) launched its first “green” Eurobond, the Indus bond, a 10-year, USD 500 million bond at a 7.5% interest rate, for the construction of the Diامر-Bhasha and Mohmand dams. The experience showed that there is considerable appetite for green bonds in Pakistan as the Indus bond was oversubscribed by 6 times, reaching close to USD 3 billion. Since then, there has been a lot of changes in the market and the overall macro-economic situation of the country and currently several challenges and high-risk perception of the country substantially impacts the capacity to float green bonds in the international market.

Green bonds can catalyze investments in Pakistan’s renewable energy market by providing dedicated financing and attracting environmentally-conscious investors, particularly in an environment where conventional investors are hesitant to participate.

## Public Private Partnership

Pakistan shows a robust endorsement for PPP, both at the federal and provincial levels. The Public Private Partnership Authority Act, 2017, commonly referred to as the “P3A Act,” was enacted to establish a national P3A authority. However, the scope of this act, as well as the functions of the P3A, are constrained and expanded only to Federal Government line ministries and their respective infrastructure projects. Additionally, the provincial units, such as those in Sindh and Punjab, have yet to include any renewable energy projects within their PPP ventures.

Among total investments in PPP, the energy sector remains the major recipient attracting approximately USD 25 billion from 1990 to 2019. However, almost all of these investments are primarily focused on either hydro or coal-based power projects. The effectivity of PPP for energy projects showed the potential to mobilize large scale funds for solar and wind energy projects.

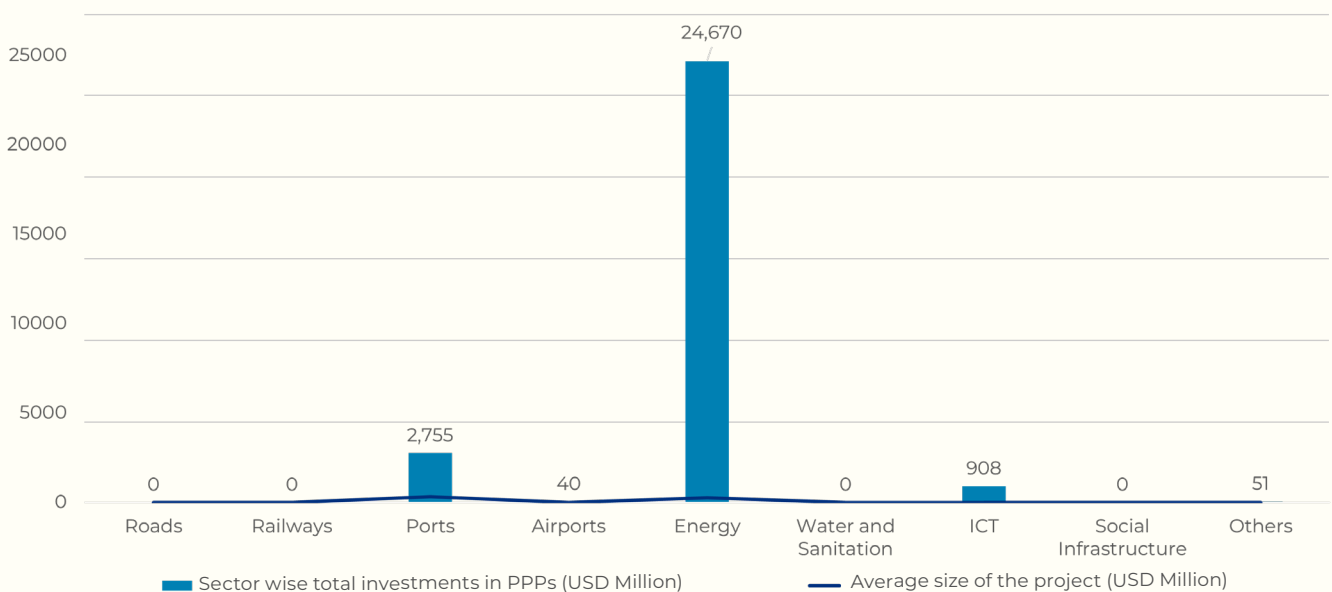


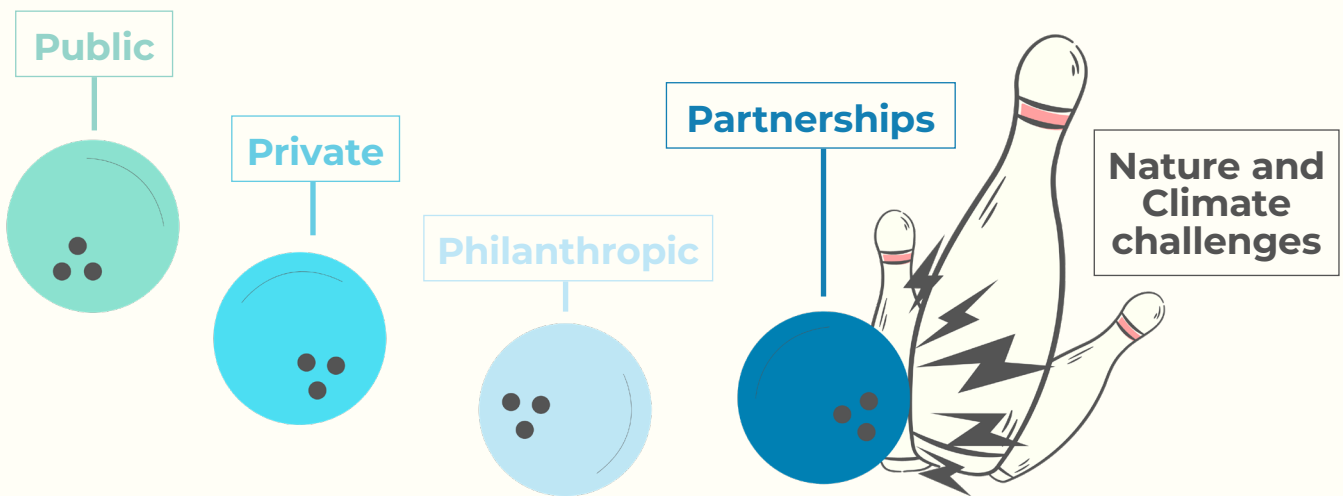
Figure 17 - Investments in PPPs by sector in Pakistan, 1990-2019 [31]

## Philanthropic-Public Private Partnerships

The Philanthropic-Public-Private Partnership (PPPP) model harnesses the ability, network and capacity of its members to bridge financing and knowledge gaps under traditional PPP mechanism through a more patient, concessional, and impact-driven capital of philanthropic funds and agencies, thereby facilitating the establishment of capital structures for sustainability. There is a strong alignment among philanthropic founders when it comes to climate and nature, and their interest in the sector is growing. Philanthropy could attract agile and risk-tolerant capital, thereby unlocking sustainable funding sources.

# 4Ps...

...can generate new dynamic capital structures



According to World Economic Forum, philanthropic organizations centered on climate and nature issues in Asia, collectively allocated over \$3.7 billion in funding in 2023. Of this amount, at least \$1.9 billion was earmarked for global climate and nature initiatives, while \$580 million specifically targeted climate and nature projects in Asia. [30] The lower funding mobilization in Asia is because of insufficient awareness and understanding of effective solutions. The lack of clarity is compounded by challenges such as the absence of structured data collection, measurable outcomes, and the mismanagement of delivery timeframes, further intensifying the situation.

There is a growing interest among philanthropic funders in Public-Private-People-Partnerships (PPPPs), which provide a foundation for scalability and offer significant opportunities in the Asian region. PPPPs can strategize and fund, multiplying resources and enabling philanthropic funds to be catalysts for substantial returns on investment.

## Harnessing off-shore wind power through PPPP's in Philippines

To address the need for market support and the development of renewable resources in the Philippines, Aboitiz Power Corporation partnered with RMI and received support from Clime Capital and the United States Trade and Development Agency (USTDA) to initiate a feasibility study in August 2022. The objective of this study was to assess the feasibility of harnessing up to 3 GW of offshore wind projects in the Philippines.

A technical working group conducted an evaluation process to identify the most promising locations for offshore wind farms. They considered factors such as wind resource potential, bathymetry, distance to interconnection points, and proximity to ports. Out of the 19 sites assessed, Aboitiz Power Corporation selected six for further research, which received funding for detailed studies.

Tara's philanthropic funding played a crucial role in expediting the initiative by providing funding to assess the Philippines' preparedness for offshore wind development in line with the government's climate change priorities. The funds were used to establish and expand local programs, supported by RMI, AboitizPower, and Clime Capital, who oversaw the site assessment and release of the study. This successful model can now be replicated to accelerate similar initiatives.[32]

## Unlock Private Capital

Banks, Institutional investors, such as pension funds, insurance companies, and fund managers, hold significant assets globally, amounting to over USD 422 trillion.[33] These investors traditionally allocate their funds across various asset classes, with a majority invested in equities and bonds. However, their investment strategies depend on factors like liquidity needs, risk appetite, and client obligations. Many institutional investors lack the expertise

and means to directly invest in renewable energy projects due to high transaction costs and large minimum investment requirements.

To attract financing from institutional investors, large-scale investment vehicles that bundle renewable energy projects are necessary. In Pakistan, funds and insurance companies face regulatory constraints that limit their ability to invest funds directly in infrastructure projects, as well as fulfilling their fiduciary duty and specific investor mandates.

The mutual funds sector, for instance, primarily allocates most of its funds to government-backed and highly liquid securities. There are regulatory impediments that limit the sector's ability to allocate a significant portion of its funds towards project financing. However, financing instruments such as Green, Social, Sustainable, and Sustainability linked GSSS bonds have the potential to mobilize private capital at a significant scale by appealing to institutional investors who typically do not invest in individual projects. To expand this market, robust third-party certification, standardized industry guidelines, harmonized taxonomies, cost-effective regulation, improved instrument design are essential and regulatory interventions remain necessary.

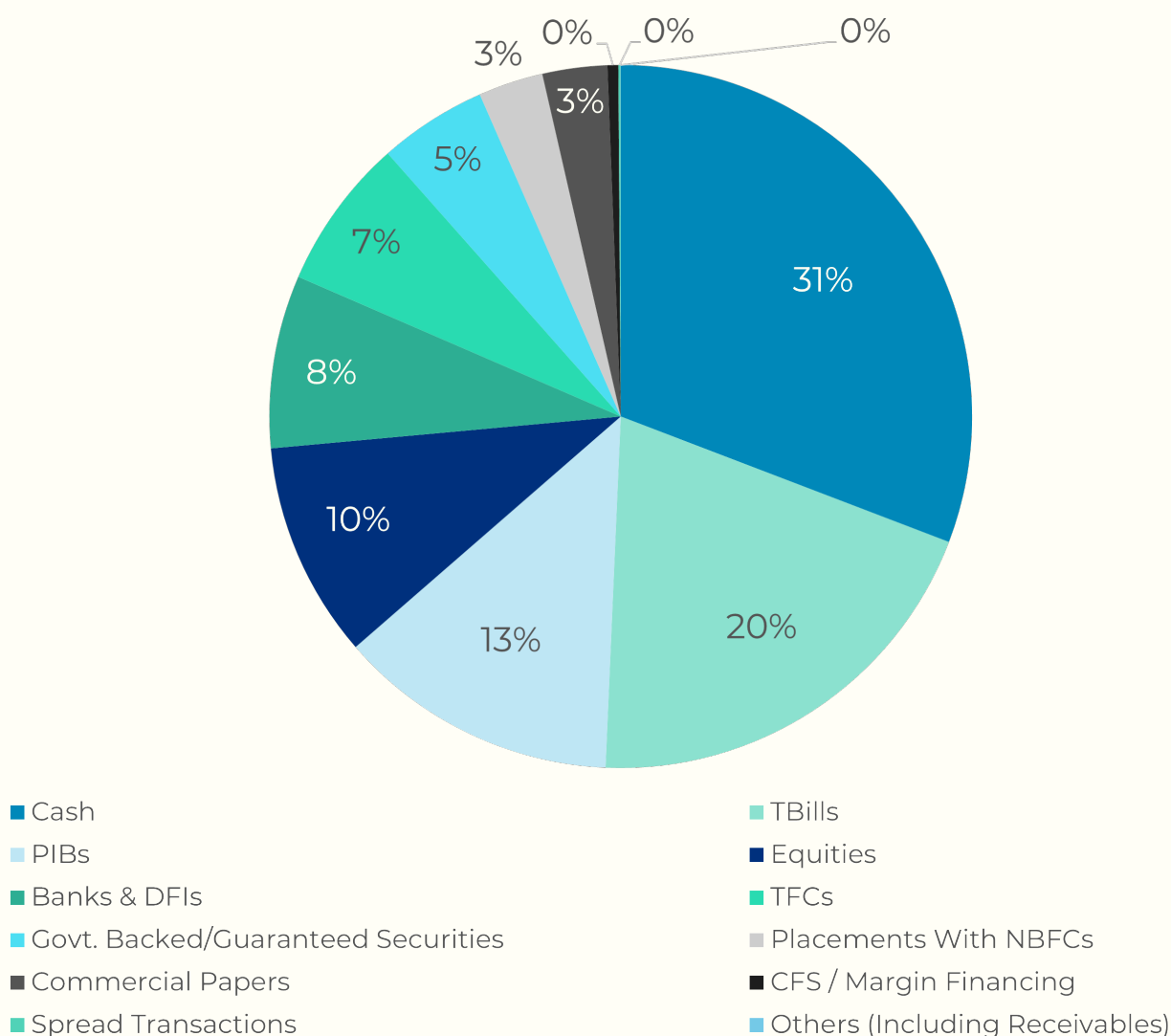


Figure 18 - Asset allocation of Pakistan's mutual funds [34]

## Gender Bond – A Case Study from a Parallel Market for Accessing Institutional Investments

Pakistani microfinance operator, Kashf Foundation's Gender Bond of PKR 2.5 billion is a local success story that highlights the potential of attracting institutional capital towards high-risk ventures. The bond is a privately placed capital market instrument that will subsequently be listed.

The instrument stands out for its noteworthy feature of having Infrazamin Pakistan (IZP) providing a guarantee cover of Rs. 2.85 billion for investors, including 100% principal and one interest installment. Infrazamin's (IZP) guarantee provides investors with protection against the risk of default by the underlying obligor, Kashf Foundation. Unlike conventional Term Finance Certificates (TFCs), where investors bear the entire default risk, IZP assumes this responsibility.

This structure helps address a common challenge in the microfinance sector, which is the difficulty in raising liquidity from the capital market. In Pakistan, most institutions in the sector have ratings within the A- to A+ range, which is considered non-investable. Typically, obligors would need to pledge cash or near-cash collateral to improve the rating of the instrument, which can further strain liquidity and is not aligned with the objective of raising funds from the capital market. [35]

**For a long-term instrument, Kashf can target the below investor audience, liquidity of which can be assessed as following:**

### Target Investors & Fund Size

01

Fixed Income Funds

## PKR 200 Billion

Prospective Investors:  
Atlas AMC, HBL AMC, MCB AMC, UBL AMC, NBP AMC, Alfalah AMC

02

Provincial Pension Funds

## PKR 12 Billion

Prospective Investors:  
Sindh Pension Fund & Punjab Pension Fund

03

Insurance Companies (Property &amp; Life)

## PKR 328 Billion

Prospective Investors:  
Jubilee, EFU, Adamjee, IGI, Jubilee Life, IGI life, EFU Life Insurance

## Project Aggregation and Securitization

The lack of institutional history and local equity often poses challenges for small and local developers in undertaking renewable energy projects due to the limited avenues of financing available. Financial institutions, including banks, tend to view these developers as risky and prefer to finance well-established contractors with experience, credit history, and supplier support.

Smaller size captive, on-site and localized energy generation systems hold the key in transition to renewables but the dearth of financing disincentivizes new players from participating in the market.

To overcome the mismatch between the size of smaller energy transition projects and the investment

requirements of financiers like institutional investors, project aggregation and securitization vehicles can play a role. These combine smaller projects, and may use concessional finance to mitigate credit risks, thereby creating an investment-grade portfolio that attracts larger institutional investors.

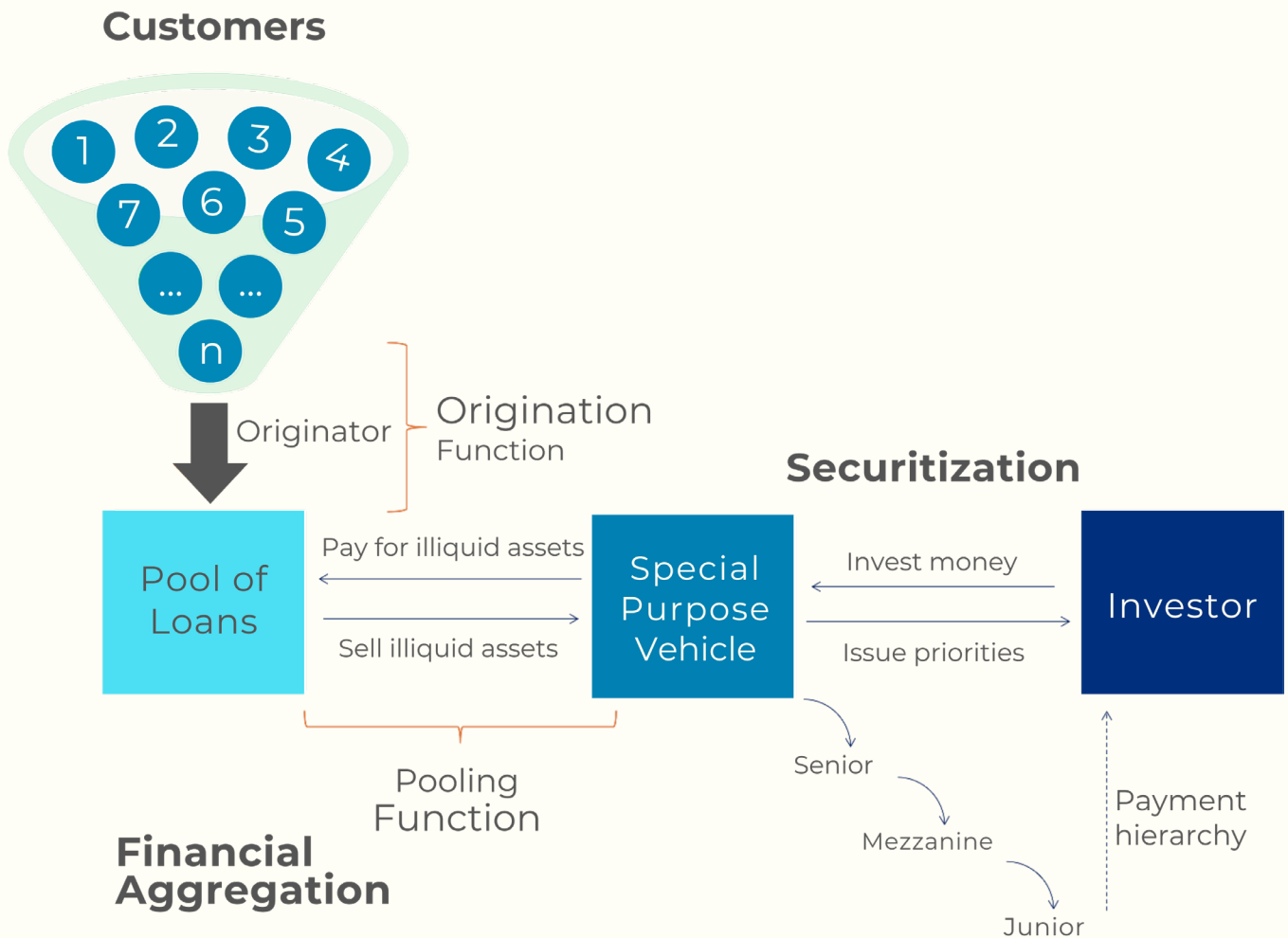


Figure 19 - Project aggregation and securitization model

Further, institutional investors in developed markets, such as hedge funds, possess significant liquidity that can be utilized across various asset classes. By directing this liquidity towards emerging markets, it can expedite the availability of financial resources for renewable energy projects in these markets. A potential catalyst for this process would be the implementation of standardized investment grade pooled securities.

Pooled investment vehicles, such as Infrastructure Investment Trusts (InvITs), enable developers to sell a portion of revenue-generating assets to pension funds, sovereign wealth funds, insurers, and private equity funds, thereby freeing up capital for further development. DFIs could participate in InvITs or similar structures in emerging markets and developing economies to attract domestic and foreign capital for the clean energy transition.[36]

## IndiGrid – Leveraging InvITs for Finance Mobilization

IndiGrid, India’s first power sector Infrastructure Investment Trust (InvIT), was established in 2016 with the aim of promoting wider ownership of power infrastructure in India and ensuring inclusive and reliable electricity access. With the support of KKR, IndiGrid effectively executed value-enhancing acquisitions while maintaining strong cash flows, resulting in significant growth in its Assets Under Management (AUM) from INR 37 Billion to INR 269 Billion (2016-2023). Positioned to benefit from the substantial growth potential in the Indian transmission and renewable energy sectors, IndiGrid is following a systematic and gradual diversification strategy and is expanding its investor base on both equity and debt fronts.

## Co-Lending

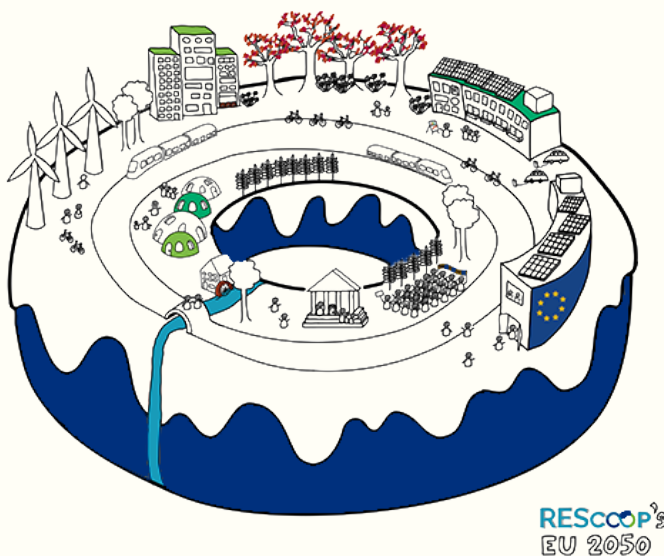
Investors who require scale and diversification, participating in single projects may be difficult. Portfolio approaches, where DFIs raise capital and deploy it into a set of projects, can attract a wider range of investors. These approaches, such as the Managed Co-lending Portfolio Program (MCP), have been successful in raising significant funds for investment in emerging markets and developing economy loans.

A pertinent example is the “Super Six” project in Pakistan designed to generate affordable and environmentally friendly electricity. All these wind projects have been developed by domestic companies and are co-financed by domestic lenders and multilateral financial institutions. The program aligns with the joint energy strategy of the World Bank Group, encompassing IFC, the World Bank, and the Multilateral Investment Guarantee Agency (MIGA). The strategy aims to encourage private investments to expand clean energy generation and reduce the cost of power.[37]

## Open Banking and Climate FinTech

Open banking is transforming the financial landscape by encouraging banks to collaborate with third parties, thus opening access to customer data that was traditionally held exclusively by banks. This shift is fostering significant benefits across various industries, particularly in emerging sectors like solar and wind energy. For instance, crowdfunding, particularly through crowdlending, has become a powerful tool for financing projects. Platforms like Prime Energy allow retail investors to engage with green bonds and fund solar projects throughout Europe, demonstrating the effective use of crowdfunding in syndicating debt capital.[38]

Additionally, the REScoop initiative in Europe exemplifies how citizen energy cooperatives can drive renewable energy and energy efficiency projects, offering local benefits such as job creation and reduced energy costs. These cooperatives operate on democratic principles and focus on reinvesting profits into their communities, contrasting with traditional corporate structures.[39]



In Pakistan, addressing information asymmetry and access to financial data through open banking could catalyze the adoption of innovative digital financing models such as Peer-to-Peer (P2P) lending and crowdfunding.

## Debt Swaps

As of September 2023, Pakistan faces a significant challenge with its external debt, reaching a record high of 101.3 billion USD.[40]

One potential solution that Pakistan is exploring is the concept of “Debt to Nature Swaps”. This approach involves refinancing existing debt at improved pricing, coupled with Key Performance Indicators (KPIs) that center around environment-related interventions. By linking debt restructuring to specific green initiatives, Pakistan could make progress on its environmental goals while managing its debt more effectively.

## China – Egypt Debt Swap

Egypt has long grappled with an external debt crisis, and its government is currently facing a severe liquidity challenge. To address these, the North African country has initiated debt swap negotiations with China. The swap is valued at around USD 100- USD 120 million and involves canceling a portion of Egypt’s foreign debt in exchange for local investments in green projects in 2024. This debt swap agreement is in addition to two other ongoing swap negotiations with Germany and Italy. Egypt owes approximately USD 8 billion to China, and through this agreement, it aims to lower its debt burden by converting it into local currency investments in the green infrastructure sector.[41]



## Conclusion

The trajectory of renewable energy finance in Pakistan has undergone notable shifts, reflecting broader trends in energy investment patterns and policy frameworks. Historically, investment in the energy sector has predominantly favored fossil-based projects, with a surge in renewable energy investments observed until 2015. However, subsequent years witnessed stagnation as focus pivoted towards fossil-based endeavors, particularly under initiatives like the CPEC.

Recent developments, however, indicate a significant reversal of this trend. Factors such as the declining costs of renewable energy technologies, global commitments to carbon reduction highlighted by initiatives such as the coal moratorium announced by China's President Xi Jinping, and a renewed emphasis on green energy within the framework of CPEC are steering the focus back towards renewables. Pakistan's own Alternative Renewable Energy Policy, with its ambitious target of incorporating a 30% of renewable energy share, signals a clear commitment to this transition.

However, while the intent to prioritize renewables is evident, the challenge lies in mobilizing the necessary finance to realize these ambitions. Renewable energy projects often require substantial upfront capital, and with the ongoing economic challenges in the country, the public sector's appetite for investment remains limited. Bridging this finance gap necessitates innovative approaches and the exploration of untapped funding sources.

In this context, market-based instruments such as crowdfunding, blended finance mechanisms, green bonds, PPPs, debt and climate swaps, as well as third-party guaranteed instruments, emerge as crucial facilitators. Moreover, there is a need to tap into underutilized capital reservoirs such as mutual funds, pension funds, and private equity, redirecting these funds towards renewable energy ventures.

The role of the private sector is paramount in driving this transition, not only in terms of financial investment but also in fostering investor confidence. Recent experiences, such as delays in payment to IPPs and policy uncertainties, have eroded investor trust. Restoring confidence through transparent dealings, resolving existing issues with investors and developers, and providing policy stability will be instrumental in reducing perceived risks and consequently lowering financing costs.

In essence, while the path towards renewable energy finance in Pakistan may be beset with challenges, there exists a clear opportunity to capitalize on the shifting tides towards sustainability. By leveraging innovative financing mechanisms, tapping into diverse funding sources, and bolstering investor confidence through stable policies and transparent practices, Pakistan can accelerate its transition towards a greener and more resilient energy landscape.



## Glossary

**Private Equity:** refers to investments made in private companies or assets that are not publicly traded on a stock exchange. These investments are usually made by private equity firms and involve acquiring equity ownership in companies to drive growth and generate a return on investment.

**Venture Capital:** is a type of private equity financing that is provided to early-stage and high-potential companies with the expectation of long-term capital appreciation. Venture capital firms typically take equity stakes in startups or small companies in exchange for capital investment.

**Angel Investors:** are individuals who provide financial backing to early-stage startups or entrepreneurs in exchange for ownership equity in the company. Angel investors often bring not only capital but also expertise, mentorship, and networking opportunities to support the growth of the business.

**Institutional Investors:** are organizations that invest large sums of money on behalf of their members or clients, such as pension funds, insurance companies, endowments, and sovereign wealth funds. These investors typically have professional investment strategies and manage portfolios across a range of asset classes.

**Green Bond:** is a type of fixed-income financial instrument used to raise funds for climate and environmental projects. These bonds are specifically earmarked for projects with positive environmental impacts, such as renewable energy, clean transportation, or sustainable agriculture.

**Multilateral Banks:** are financial institutions that provide financial assistance to multiple countries or regions. These banks are typically owned by several countries and support development projects, infrastructure investments, and economic initiatives in partnership with national governments and other organizations.

**Senior Debt:** is a type of debt that has priority over other forms of debt in the event of default or bankruptcy. This debt is usually the first to be repaid and offers lower interest rates compared to subordinated debt or equity financing.

**Sovereign Guarantees:** are legal commitments made by governments to back the financial obligations of a public or private entity. These guarantees provide assurance to lenders or investors that the government will cover the debts or liabilities of the guaranteed entity in case of default.

**Credit Enhancement Facilities:** are financial instruments or mechanisms used to improve the credit quality of debt securities or loans. These facilities help to reduce the credit risk of a transaction and attract investors by providing additional collateral or guarantees.

**Modaraba:** is an Islamic financial concept that involves a partnership between an investor (rabb-ul-maal) and a manager (mudarib) to invest in projects or businesses. The profits from the investment are shared between the parties according to an agreed-upon ratio.

**Micro Grids:** are small-scale, localized energy systems that can operate independently or in conjunction with the main power grid. These grids can incorporate renewable energy sources, energy storage, and advanced control systems to provide reliable and resilient power supply.

**Distributed Generation:** refers to the generation of electricity from decentralized sources, such as rooftop solar panels, wind turbines, or small-scale power plants. This approach allows energy to be produced closer to the point of consumption, reducing transmission losses, and increasing energy security.

**Philanthropic-Public Private Partnerships:** are collaborative initiatives between government entities, private sector organizations, and philanthropic foundations to address social or environmental challenges. These partnerships combine financial resources, expertise, and networks to achieve common goals for public benefit.

**Open Banking:** is a financial service model that allows third-party financial service providers to access customers' banking data and services through open application programming interfaces (APIs). This model promotes competition, innovation, and transparency in the financial sector.

**Climate FinTech:** refers to financial technology companies that develop digital solutions to address climate change-related challenges. These companies leverage technology, data analytics, and sustainable finance principles to facilitate investment in climate-friendly projects and initiatives.

**Project Aggregation and Securitization:** is a financial process whereby multiple smaller projects or assets are combined into a single investment product, which is then divided into tradable securities. This process allows investors to diversify their portfolios and increase liquidity by securitizing assets that may not be individually marketable.

**Infrastructure Investment Trust:** is a type of investment vehicle that allows investors to invest in infrastructure projects through a listed trust structure. InVITs pool funds from multiple investors to finance infrastructure assets, such as roads, power plants, or airports, and distribute income generated from these assets to investors.

**Managed Co-Lending:** is a collaborative lending arrangement between a bank and a non-banking financial company (NBFC), where both entities jointly fund a loan to a borrower. In this arrangement, the co-lenders share the credit risk, decision-making responsibilities, and loan servicing duties according to mutually agreed terms.

**Debt Swaps:** are financial transactions in which one party exchanges its existing debt obligations for new debt securities or a different form of debt. Debt swaps can be used to restructure debt, lower interest rates, extend maturity dates, or modify repayment terms to improve the financial position of the debtor.

**Investment-grade portfolio:** refers to a collection of financial assets that are considered to have a relatively low risk with interest payments or dividends that are expected to be paid reliably.

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