

PAKISTAN Renewable Energy Distributed Generation NAMA

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Country Context

- Pakistan Vision 2025, the country's roadmap of economic growth, social inclusion and sustainable development, envisions Pakistan among the top 25 economies of the world by 2025
- Being very dependent on agriculture, Pakistan is particularly susceptible to the effects of climate change
 - Agriculture represents 24% of total GDP, and employs 48% of total workforce
- Improving the adaptation capability is of the highest priority



Mitigation policies

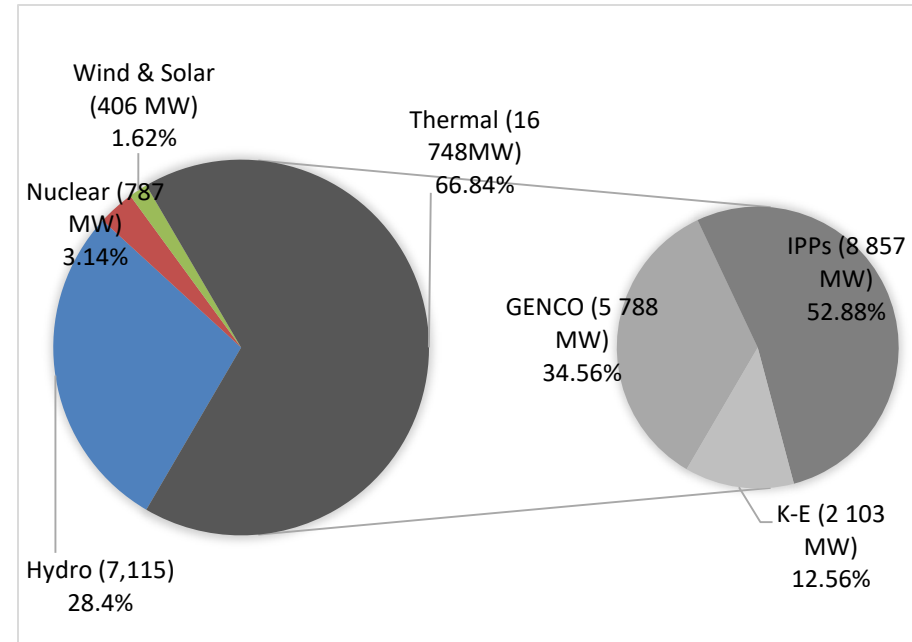
- Pakistan's INDC is rooted in its Vision 2025
- Pakistan is committed to reducing its emissions after reaching peak levels subject to affordability, provision of international climate finance, transfer of technology and capacity building
- A process of calculating the country's future emission projections through detailed studies and analysis is currently underway



Submissions to date: 160 ; Parties Represented: 188

The Pakistani Energy Sector

- Largest contributor to GHG emissions (81% in 1994, 50% in 2008)
- Thermal Power Generation includes: FO-58.38%, Gas - 39.61%, diesel -1.78%, coal- 0.23%



Electricity generation mix - 2015



The Pakistani Energy Sector

- **ENERGY CRISIS:** The combined shortfall in electricity generation (up to 7000 MW) intensifies the woes of consumers, disrupts industrial and agricultural production
 - Load shedding of 6-12 hours per day
- Planned projects indicate that most of the power is to be sourced from the country's vast coal reserves and LNG
- Natural conditions provide ample opportunities for the exploitation of RE, particularly through solar and wind technologies
 - Especially in distributed generation, solar applications are already competitive with conventional fossil generation

RE Energy Policy Framework

- Pakistan reacted to the energy crisis
 - Many incentive for RE under the FIT schemes
 - FITs guaranteeing 17% IRR
 - Sovereign guarantees of EPAs between investors and utilities
 - US\$ and Euro exchange rate guarantees to foreign investors
 - Power Evacuation guarantees
 - Zero % import duties / Sales tax / Income Tax / withholding tax / turnover tax on REs
 - Protection against political risk & change in law
 - Repatriation of Equity along with dividends freely allowed
 - In September 2015, the National Electric Power Regulatory Authority (NEPRA) approved the NEM regulation
 - Allows customers with up to 1 MW solar and wind plants to self-generate and sell excess power back to the grid
 - Uptake has been slow, due to number of barriers, which the NAMA project seeks to address

Barriers to uptake of RE DG installations

- **Policy**
 - NEPRA has passed revised NEM regulations, but specific provisions of the regulation need testing in the real world (NEM prices, permitting & approval process)
- **Financial**
 - Lack of available non-recourse financing options at competitive interest rates for consumers, domestic loan rates are high
 - Financial institutions view renewable projects as risky and the DG RE market as too small
- **Technical**
 - Incumbent grid issues and grid stability
 - Lack of capacity and resources in utilities to assess RE DG impact on grid, and to implement operational and investments solutions for RE DG uptake
 - Utilities do not have capacity to assess and approve NEM applications
 - Potential interconnection obstacles for small-scale RE projects
 - No certification of DG RE equipment and accreditation of installers
 - Technology risks to consumers, grid operators, and banks
- **Capacity & Awareness**
 - Lack of capacity for massive uptake of RE DG exists everywhere: the financial sector, among utilities, vendors & consulting companies to deliver projects, and government to monitor sector and improve on policies
 - Benefits of small-scale renewable energy are not well-known

Goal of the NAMA proposal

- The goal of the project is to remove the barriers and create enabling conditions and strategic approach to improving the investment climate for renewables that can:
 - Create a pipeline of promising renewable energy investments
 - Mobilize domestic capital for RE DG development
 - Improve the financial viability of the electricity distribution service companies

How the proposal will achieve its goal

- **Technical component:**
 - Establish RE **technology certification and a vendor accreditation program** to reduce the technology risks
 - The certification will allow for standardization of products/installations and ensure that the technology can be reliably integrated into the grid
 - The accreditation program will ensure that installers will be fully competent, deliver only certified technology, and installations will meet permitting requirements
 - Assist 3 utilities in **developing new business models** for DG RE
 - **Pilot Smart Grid Solutions** for DG RE
 - Conduct **education and awareness** campaign among potential consumers

How the proposal will achieve its goal (2)

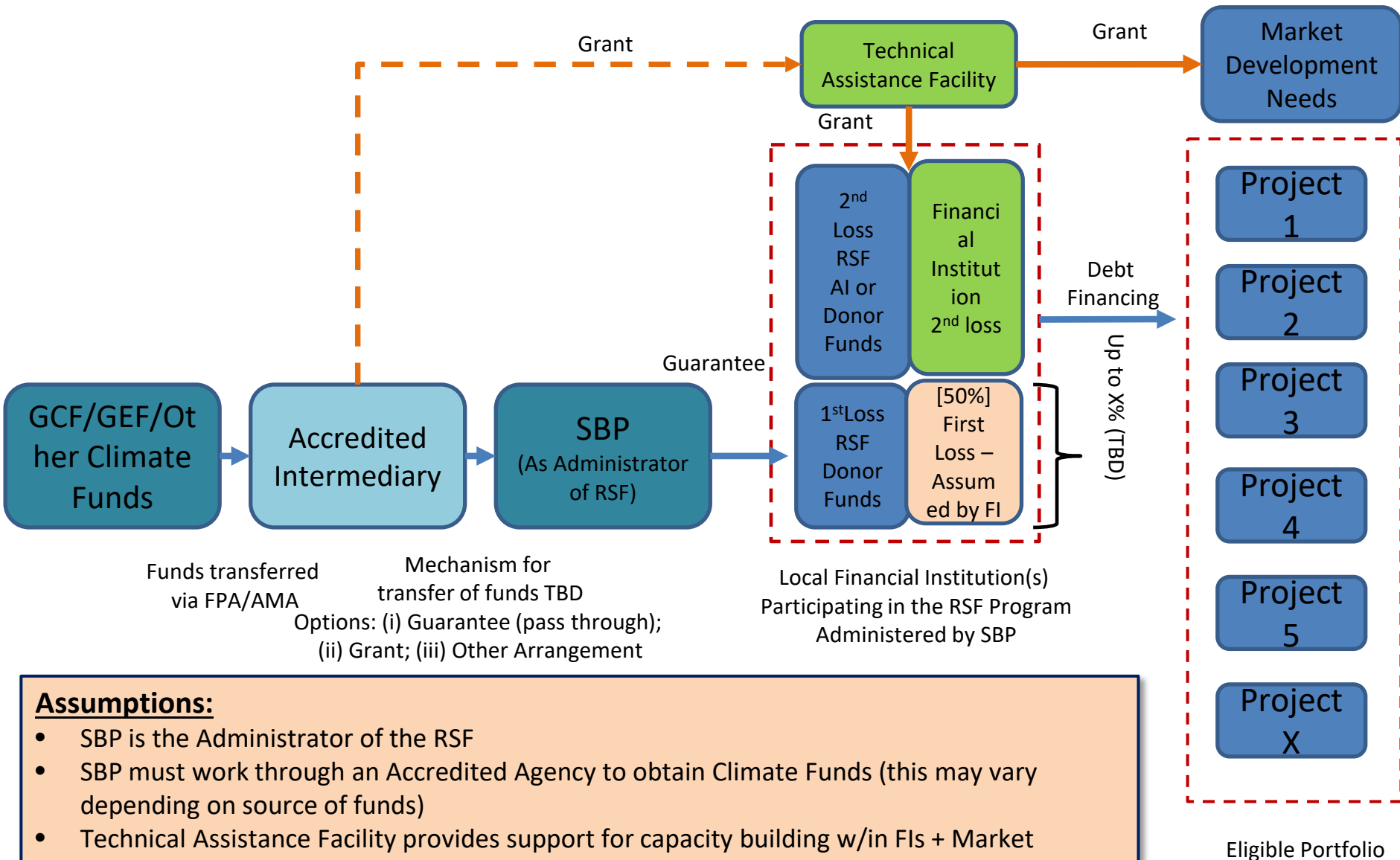
- **Financial Component**

- Establish a Risk Sharing Facility (RSF) to act as a guarantee for losses incurred for non-performing loans
 - Will encourage banks to give out loans on non-recourse basis, lower interest rates, or extend loan maturities.
 - RSF will reduce risk in the early stages of market development and achieve greater leverage of funds from the private sector, while not distorting the underlying investment rationale of solar technology
 - The State Bank of Pakistan expressed interest in administering the RSF
 - Has experience in administering similar products for various markets in Pakistan, including in the energy sector
- Build capacity of local financial institutions to finance projects
 - Development of standardized documentation, training in technology and project assessment
- Offer grants for pre-feasibility, feasibility, and investment grants for project pipeline development

How the proposal will achieve its goal (3)

- Financial Component (continued)
 - RSF: overview of structure options

Potential RSF Structure (A)



Assumptions:

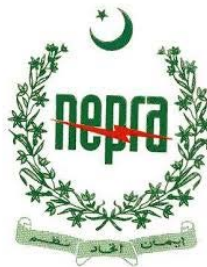
- SBP is the Administrator of the RSF
- SBP must work through an Accredited Agency to obtain Climate Funds (this may vary depending on source of funds)
- Technical Assistance Facility provides support for capacity building w/in FIs + Market Development Needs (both important for success of Program)

Project stakeholders

- AEDB
- Ministry of Water and Power (MWP)
- State Bank of Pakistan
- NEPRA
 - Independent organization with the exclusive responsibility for regulating the provision of electric power services
- Ministry of Climate Change (MCC)
- 3 Pakistani Distribution Utilities: Islamabad (IESCO), Lahore (LESCO), and Karachi (K-Electric).
- Center for Clean Air Policy (CCAP)



CCAP



Expected outcomes

- **Mitigation Outcomes**
 - Reduced GHG and other air pollutants emissions by substituting fossil fuels by renewable energy sources (including substituting diesel backup generators commonly used during power cut-offs)
- **Sustainable Development Benefits**
 - Job creation due to increased installations and demand for solar DG RE technology
 - Increased social wellbeing by providing the energy needed to fuel schools, hospitals and businesses that improve quality of life
 - Improved energy security through reduced fuel import
 - Increased grid stability and avoided generation costs
 - Reduced transmission and distribution losses in the power grid, reduced theft
 - Improved productivity and competitiveness of the private sector.
- **Adaptation benefits**
 - Increased climate resilience of the power sector

Project Financing

- **Domestic Public Sector Contribution: TBD**
- **International Support Requested: TBD**
 - **For the financial component:**
 - *Loan Guarantees* to decrease perceived risks by local financial institutions and incentivize them to enter the DG RE market
 - **For the technical assistance component**
 - *Grants* to build internal capacity, to increase market confidence (vendor certification program and technology standards), to pilot smart grids, to conduct market outreach and campaigns to promote DG, for project pipeline development (i.e. bring initial set of projects to finance-ready stage by conducting feasibility studies, and obtaining permits)

Conclusions

- **The project contributes to:**
 - Achieving the objectives of Pakistan’s Vision 2025 by increasing access to reliable low carbon energy and reducing economic inefficiencies due load shedding
 - Transforming the energy sector by introducing new business models and DG energy resources
- **The project is replicable:**
 - Lessons learned developing the project pipeline, working with local financial institutions, and piloting smart grids projects can guide DISCOs throughout the country in determining how they can promote the uptake of DG RE in their territory, even in DISCOs with lower financial viability given that risk sharing acts on the supply side and new business models can create new revenue streams
- **The continued support from all key stakeholders demonstrates strong national commitment and political buy-in**
- **International support would enable to remove the barrier to increasing private sector investments in DG RE, namely lack of access to non-recourse financing at competitive rates**

Project point of contact



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