# A Concept of Distributed Solar Energy Fund for Pakistan

## A. Introduction:

State Bank of Pakistan (SBP), being the central bank, regulates/ supervises the banking sector of the country. In addition to its regulatory role, State Bank has stretched out to promote financial inclusion of the populace and increase flow of financing to the priority sectors as part of its development finance initiative. State Bank has identified SMEs, agriculture, housing, exports and micro-borrowers as key priority and has tasked the Development Finance Group (DFG) under the supervision of Executive Director for taking policy initiatives to increase funding to these segments. The DFG comprises of three departments, namely; Agricultural Credit and Microfinance Department, Infrastructure, Housing and SME Finance Department and Islamic Banking Department.

Pakistan is faced with severe energy crisis and this crisis is taking a toll on economic progress apart from disrupting life of citizens. The Government estimates show that energy shortfall causes a reduction of 2% in GDP Growth. The Government is striving to change the current energy mix and increase share of alternative/ sustainable energy. The current structure provides ample opportunities to properly harness sustainable energy resources and 'generate' electricity through implementation of measures that encourage energy efficiency. Further, global warming and shifts in weather patterns may pose serious threats to agricultural productivity and upset balance living conditions of citizens. Fast meltdown of glaciers and frequent flooding in recent years are only manifestations of these dangers.

Cognizant of these emerging scenarios, State Bank has recently undertaken promotion of green and sustainable banking as a special initiative within its development finance group. The green banking covers such areas as resource efficiency, environmental protection, promotion of renewable energy/ energy efficiency financing within broader framework of sustainable development. The Green Banking, therefore, has the potential to address both energy and environmental concerns.

## B. The Green Banking Initiative

The activities/ initiatives under the 'Green Banking' may be categorized in three broad areas:

### a. The Regulatory Measures:

Green Banking Guidelines serves as a coherent set of guidelines that provide guiding instructions to steer banks/DFIs towards implementation of green banking measures in their products/ services and operations. The regulatory push is also required to encourage banks/ DFIs to adopt environmental risk management in their lending practices.

### b. Market Development:

A strategy of creating meeting points among banks and prospective sponsors of renewable energy projects by increasing understanding of banks/ DFIs on renewable energy projects, creating awareness among potential sponsors on available funding facilities from banking channels and incorporating environmental risk management in the credit appraisal processes of banks.

### c. Market Intervention:

The banks generally shy away from financing to renewable energy and energy efficiency projects due to higher perceived risks of these projects. In order to address this scenario, State Bank is working to establish funding and credit enhancement facilities with the objective of incentivizing banks/ DFIs to develop their internal lending products and increase their financing for the sector. Separately, *SBP is also working to revise its existing refinancing facility for financing renewable energy projects. The Scheme provides subsidized financing for establishment of renewable energy projects of upto 20 MW.*

## C. Energy Scenario in Pakistan

The Vision 2025 of Pakistan targets availability of affordable electricity to all businesses and households. Although the country has made huge progress in achieving these targets, significant bottlenecks stand in the way of this objective, namely the current power deficit and circular debt in the power sector. Indeed, the power deficit exceeds 7,000 MW during peak summer season, resulting in load shedding of up to 12 hours a day in urban areas and 18-20 hours in rural areas. In a country where per capita energy consumption is one fifth of the world average, electricity shortages may slow down growth in industrial sector, leading to factory shutdowns, production decline, reduced economic growth, and ultimately to increased poverty. The gap between the cost of generation and the total income from electricity sales to customers creates a deficit for electricity generators and distributors, who are unable to recover their costs, with impacts on the entire electricity ecosystem.

To eliminate the energy deficit and meet growing demand, Pakistan plans to increase oil and gas exploratory efforts and imports of liquefied natural gas as well as increase the share of coal, nuclear, wind, and solar in the electricity generation mix (currently dominated by gas (50.8%) and hydro (30%) followed by oil (15.8%), nuclear (3.3%), and coal (0.2%)).

Natural conditions in the country provide ample opportunities for the exploitation of renewable energy, particularly through solar and wind technologies. In many instances, especially in distributed generation applications, solar and wind energy are already competitive with conventional fossil generation. To meet its renewable energy goals of 9,000 MW of RE installed by 2020, and 20,000 MW by 2030, Pakistan issued its Policy of Development of Renewable Energy for Power Generation in 2006. Since 2006, the Government passed new laws and regulations to make development of renewable energy more feasible. The issuing of the new net metering regulations in September 2015 holds much promise for accelerated integration of distributed generation from renewables by creating an opportunity for smaller generators to sell excess generation back to the grid. Reasonable estimates show that the distributed energy from renewable, which was already competitive with diesel based electricity, is now competitive with the grid electricity due to huge technological progress in recent years in renewable particularly solar based energy generation.

<table>
<tr><th colspan="7">Electricity Costs in Four Scenarios: Lahore Utility (LESCO), Diesel generation, Solar DG, and Wind DG</th></tr>
<tr><td></td><td colspan="3">LESCO Retail Electricity Rates (USD/kWh)</td><td>Small Diesel Generation Costs (USD/kwh)</td><td>Solar LCOE (USD/Kwh)</td><td>Wind LCOE (USD/Kwh)</td></tr>
<tr><td rowspan="3">Residential</td><td></td><td>Peak</td><td>Off-Peak</td><td rowspan="3">0.250</td><td rowspan="3">0.087-0.137</td><td rowspan="3">0.047-0.113</td></tr>
<tr><td><5kW</td><td colspan="2"></td></tr>
<tr><td>1-100 kWh</td><td colspan="2">0.056</td></tr>
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| | | | | | | |
|---|---|---|---|---|---|---|
| | 100-300 kWh | 0.098 | | | | |
| | 300-700 kWh | 0.154 | | | | |
| | >700 kWh | 0.173 | | | | |
| | | | | | | |
| | >5kW | 0.173 | 0.122 | | | |
| Commercial | <5kW | 0.173 | | | | |
| | >5kW | 0.154 | | | | |
| | Time of use | 0.173 | 0.120 | | | |
| Industrial | | 0.137-0.151 | | | | |
| | Time of use | 0.177 | 0.121 | | | |

A sizable chunk of Pakistani population is relying on fossil fuel based electricity generation to meet their electricity needs. The above scenario presents an opportunity of delivering cheap electricity to these households by converting them into small energy generation units and at the same time reducing pressure on the national grid.

## **D. Proposal of Distributed Energy Fund:**

Keeping in view the above scenario, State Bank envisages establishing a Distributed Energy Fund (DEF), a separate entity under the auspices of State Bank of Pakistan, to facilitate establishment of a funding facility for financing of solar home solutions. State Bank has received proposals of concessionary funding support program of similar nature from a number of agencies from around the world. The DEF is proposed to have a structure similar to IDCOL SHS Program with independent Board, efficient management team, and technology advisory body for selection of technology and operations committee for selection of partner institutions.

## **E. Organizational Structure**

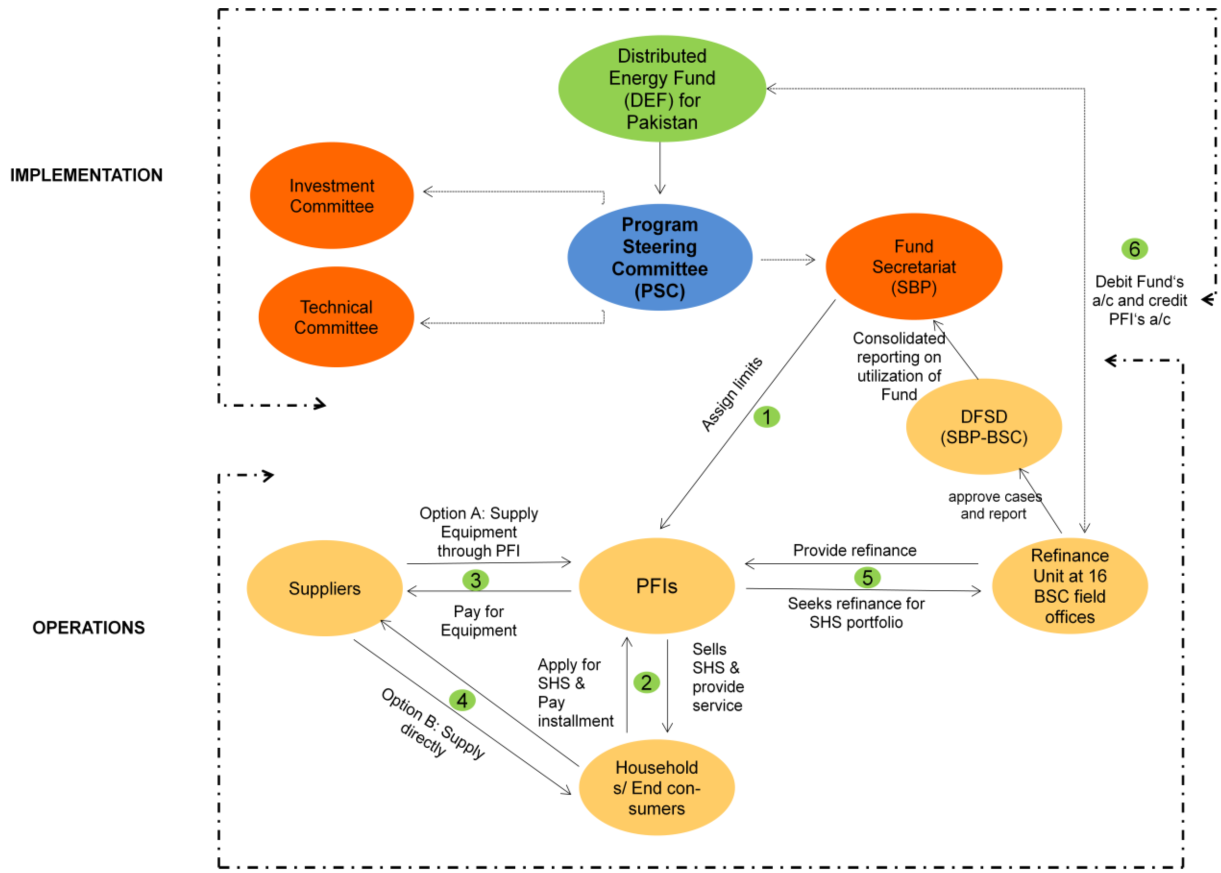
The proposed DEF may initially be housed within Infrastructure, Housing and SME Finance Department (IH&SMEFD) of SBP. The IH&SMEFD may also facilitate development of operational modalities of the Fund including terms of the loan programs, lending formalities, and procedures for selection of partner instructions, disbursements and repayments of loans and maintenance of proper MIS. The operational modalities and the terms of the funding program may be approved by an apex Program Steering Committee (PSC). State Bank will oversee the implementation of the program, review the data and report to the PSC, coordinate with the PSC for changes/ improvements in the program and issue clarifications/ guidance on provisions of the program. After the initial successful establishment of the DEF, it may be rolled out as an independent entity.

During the initial implementation, the operational activities of the DEF regarding the financing facilities will be delegated through establishment of a dedicated unit within Development Finance Support Department (DFSD) of SBP Banking Services Corporation (BSC) – a fully own subsidiary of State Bank of Pakistan.

This structure will enhance impact/ effectiveness of DEF program by providing at the outset a well-established infrastructure of SBP and will also help to reduce operational expenses of DEF. This initial implementation will also help to gauge effectiveness of program and will also provide necessary insights for further improvements in the Program before rolling it out on larger scale through establishment of a special purpose vehicle under the regulatory supervision of State Bank.

As regards the independence of DEF from political influences, it is proposed that DEF may have independent mechanisms with private sector & donor participation for selection of technologies and partner institutions.

As explained, the Structure envisions establishment of Program Secretariat in State Bank of Pakistan and establishment of an independent technical and investment Committee under the overall apex Program Steering Committee (PSC). The composition and responsibilities of these arrangements are as explained below:




## <u>Program Steering Committee (PSC)</u>

The Program Steering Committee (PSC) may be headed by the Governor, State Bank of Pakistan (SBP) and would be responsible for taking all policy decisions regarding the operations/ functioning of the program. The apex body may also review performance of the Fund and approve changes/modifications with a view to achieve the desired results.

PSC may comprise of representatives from:

- Govt. of Pakistan/ Ministry of Finance
- Alternate Energy Development Board (AEDB), Govt. of Pakistan

- Representatives of donor agencies
- Pakistan Banking Association (PBA)
- Pakistan Solar Association / Renewable and Alternate Energy Association of Pakistan
- IH&SMEFD, State Bank of Pakistan
- SBP, BSC – Development Finance Department (DFSD)

## Program Secretariat

As noted above, the key responsibilities of the SBP working as a secretariat of the Program will include:

- Organizing meetings and ensuring implementation of decisions.
- Liaising among all stakeholders including Participating Financial Institutions (PFIs), DFSD, PBA, donor agencies, government, Pakistan Solar Association (PSA).
- Evaluating proposals for becoming PFIs as per laid down criteria by the Technical Committee (TC is explained below)
- Assign limits and targets under the Program
- Monitor performance of the POs on regular basis and review their efficiency and effectiveness in achieving the desired goals.
- Hold training and awareness seminars/ workshops etc. Awareness-raising activities may include development and distribution of publicity materials to popularize SHS use among rural households throughout the country
- Ensure that only approved suppliers and equipment have been used. This may be done through inspection and verification visits by SBP-BSC field office staff.

## Technical Committee

The Technical Committee (TC) would be responsible for approving the suppliers and SHS equipment to be financed by the participating Financial Institutions (PFIs). The TC may also be mandated to select these PFIs, which would be interested in taking part under the Program. Final approval may be given by the Program Steering Committee. The Technical Committee may comprise of:

- AEDB
- Donor Agencies
- IH&SMEFD, SBP
- Agricultural Credit & Microfinance Department, SBP
- Pakistan Solar Association (PSA)

## Investment Committee

The Investment Committee (IC) would be responsible for efficient utilization of idle funds. This may be done through investments in secured Govt. T-bills or other securities depending on market conditions and under the criteria set by the PSC. This committee may be headed by the MD-BSC and may comprise of officials from:

- IH&SMEFD
- AC&MFD
- DFSD (BSC)
- PBA
- Donor Agencies
- GoP

## F. Proposed Model of Financing programs

The objective of the financing programs under the DEF would be to enhance access to energy for at least a million people in predominantly rural but also peri-urban areas through provision of solar home systems over the next five years. In later stages, other sources of renewable energy such as biogas could be added. The program envisions having two financing windows of DEF:

**a)** Concessionary loans and grants to selected willing **banks/MFBs** for onward lending to households for purchase, installation after sales service of solar equipment.
**b)** Concessionary finance (refinancing facility) to distributed energy services companies (DESCOS) i.e. suppliers of SHS to scale-up their current activities.

### Financing programs:

The proposal suggests that all banks particularly Microfinance Banks and Micro Finance Institutions (MFIs) as partner institutions. The proposal focuses on replicating the IDCOL model for concessionary financing to the households in rural communities without considering involving mobile operators for increasing its operational efficiency. We understand that the portability of solar equipments creates challenge of effective collateralization of these equipments and also increases the risk of multiple financing against the same equipment. The mobile network based Pay-as-you-go (PAYG) model presents an effective tool for disbursement of financing and its subsequent monitoring for timely repayments. The mobile GSM chips present an effective solution for tracking present location of these equipments through GPS. This tracking system can be coupled with unique product ID and centralized database of these IDs may help resolve the issue of multiple financing. Accordingly it is proposed that the IDCOL and PAYG models may be integrated for development of a functional model of financing (for smaller home solutions). We understand from our discussions with IDCOL officials that they are also working on a similar re-structuring/ integration with a view to reduce operational costs.

## G. Procedures under the Program:

### Selection of Solar Home Solutions:

The Working of Technical Committee is essential for ensuring availability of adequate supply of high quality solar home solutions for the demand side i.e. borrowers. To maintain healthy competition, the technical Committee may select 3-4 suppliers of functionally similar equipment.

- The Technical Committee will establish minimum quality standards for solar home equipment based on best international practices.
- The technical Committee will also select and establish liaison with selected qualified laboratories either locally or internationally.
- The technical committee will invite applications from the active suppliers/ manufactures of Solar Home Solutions and review the audit reports on performance of their equipment against its pre-defined quality standard for each type of the equipment.
- The Technical Committee will approve inclusion of high quality solar equipments in the list of Solar Home Solutions eligible for financing under the Program.

### Coordination with Mobile Network Operators:

The Technical Committee will also be responsible for coordination among the suppliers/ manufacturers of solar home solutions, the PFIs and mobile network operators for working out modalities of fee structure against installation of microchips on the solar equipments to be financed under the Program. However this role is limited only to making formal arrangements of increased communications and does not, in any way, imply brokering financial transactions among the potential partners. The three working entities will ultimately be responsible to work out workable arrangements for using the mobile network infrastructure on a Pay-as-you-go model.

## Selection of the PFIs:

The Microfinance Institutions and Microfinance Banks will be selected as participating financial institutions for serving as lending organizations under the program. Each PFI will be allocated financing limit for onward lending to the prospective eligible borrowers under the program. The selection of PFIs and allocation of financing limits will be approved by the PSC.

- At the start of the program, GBU Program Secretariat will invite MFBs/ MFIs to participate under the Program as PFIs.
- The willing MFIs and MFBs will be evaluated on the basis of PFI Selection Criteria developed by the Program Secretariat and approved by the PSC
- The banks are given a period of 1-2 week(s) to show their willingness for participation in the program and provide desired data to the Secretariat.
- The GBU Program Secretariat will forward its recommendations for selection of PFIs along-with their funding limits to the PSC for its final approval.
- After selection, the Secretariat will inform the selected PFIs and DFSD (operations section) regarding their allocated funding limits giving a signal to the PFIs to approach SBP for availing the facility.
- The TCCG may, based on performance of a PFI, delinquencies of the financing facilities etc revise allocated funding limits of stop/ restrict utilization of the remaining limit by any one or all PFIs in its own discretion.

## Funding:

- The selected PFIs will evaluate the eligible borrowers for lending under the Program and recommend solar home solutions to the borrowers on the basis of repayment capacities.
- The lending PFIs shall on monthly basis submit their requests for refinance to the Operations (DFSD, SBP BSC) for all loans valuated and approved during the last month.
- The prospective borrowers will be required to purchase accredited Solar equipments from the selected suppliers.
- The PFI will directly pay the price of the selected SHS to the supplier on written instructions and submission of invoices by the borrower.
- The primary responsibility of evaluation of repayment capacity of the borrowers rests on the lending PFIs. The Program Secretariat or its operation arm in DFSD, SBP BSC shall be responsible for assessment of compliance with the terms and conditions of the borrower on the basis of information/ documents submitted by the lending PFI and shall not be responsible for a thorough pre-disbursement due diligence of the borrowers. Accordingly, the Credit Risk of lending under the program shall be liability of lending PFIs only and Program will get repayments as per the repayment schedule agreed between the borrower and the PFI.
- Each PFI will report its outstanding position of all outstanding loans on monthly basis. The DFSD will ensure that the outstanding loan amount of any PFI does not exceed its allocated funding limit as conveyed.

- The Operations Section (DFSD) will consolidate the position of fresh lending and existing position of outstanding loans, delinquencies/ recoveries etc of all the PFIs and forward the report to IH&SMEFD (on monthly basis) for review and presentation to the PSC (in its regular/special meetings).

## Investment of Idle Funds:

The Funds Investment Committee will be responsible for reviewing the status of utilization of the funds by the partner institutions, working out status of available funds and then deciding on the investment of funds for the expected un-utilized period in government security papers.

## Management Information System (MIS):

- The PFIs shall report their outstanding position of financing against their allocated limits DFSD (operations section) on monthly basis (i.e. within first 5 days of every month).
- In addition to the regular reporting, the DFSD will have the right to call information from the PFIs for its own monitoring and reporting to the IH&SMEFD. DFSD shall also issue instructions to the PFIs for submission of data as per the requirements of IH&SMEFD.
- The DFSD shall maintain proper records of lending portfolio and submit periodic monthly reports of total outstanding loans, delinquencies etc and the new lendings to the IH&SMEFD.