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# India: Grid-connected Rooftop Solar Program



Oct 12, 2020

Presentation by the Energy and  
Extractives Global Practice, World Bank



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# SETTING THE CONTEXT

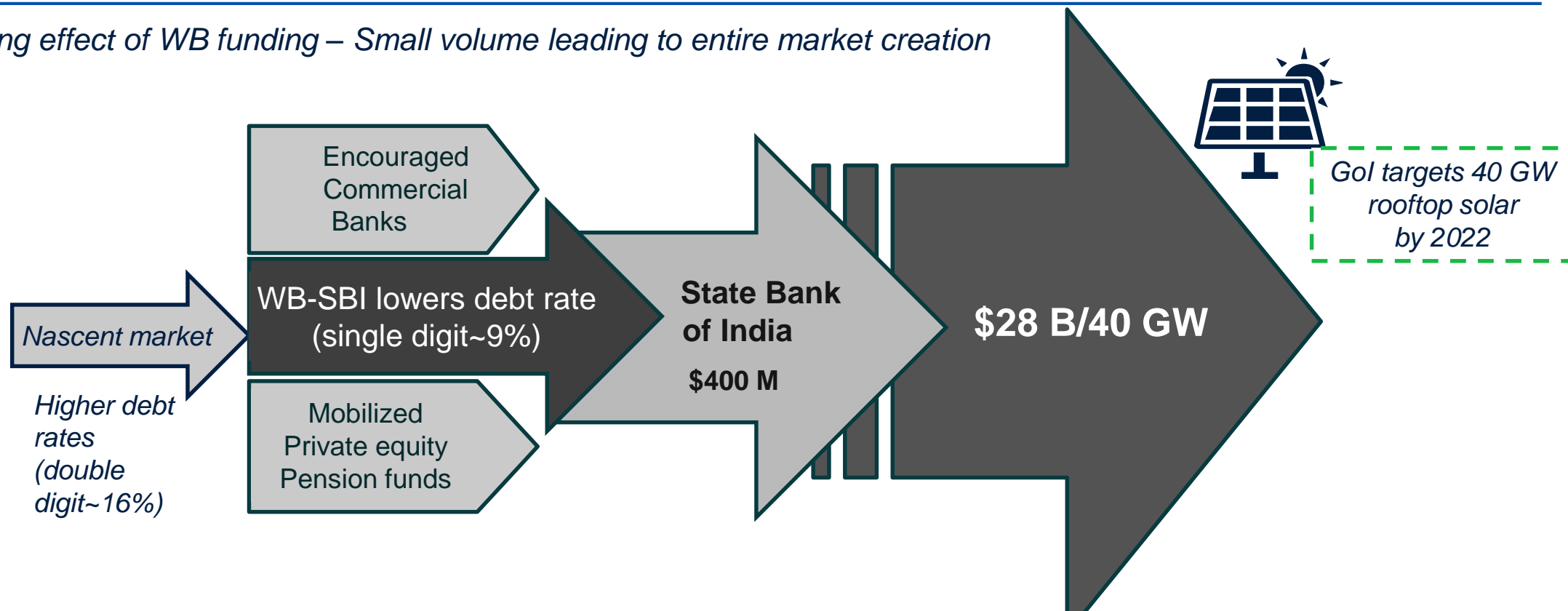
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- World Bank/SBI Rooftop Solar Program – ***Role of Development Finance***
  - Concessional loans/ reduce cost of financing
  - Catalyze/leverage private capital
  - Know-how/ technical support
- ***Policy measures*** for supporting Rooftop Solar growth
  - Policy recommendations from the White Paper



# SBI/WB IS THE FIRST RISK TAKER

*Cascading effect of WB funding – Small volume leading to entire market creation*



**Program has catalyzed \$ 3.5 billion of private capital**

2010-16	2016	2020	2021	2022
Rooftop Solar Market \$500 M 500 MW	\$ 648 M WB program is launched	\$3.5 B catalyzed 5000 MW installed	SBI to extend the program with its own \$400 M fund	

# WORLD BANK – SBI PROGRAM OVERVIEW

## Program overview

- **Debt volume:** \$ 648 million
  - World Bank - \$ 500 million (Loan)
  - Clean Technology Fund - \$125 million ([concessional terms](#))
  - Global Environment Facility - \$23 million (technical assistance & first loss)
- **Target segment:** Commercial & Industrial consumers including MSMEs
- **Implementing Agency/Borrower:** State Bank of India
- **Status:** Ongoing (2016-2021)



## Loan terms

- **Rate of Interest:** MCLR + Spread (120-150 bps)
- **Eligibility:** ECR of Investment grade (*BBB- & above*)



GLOBAL ENVIRONMENT FACILITY

Program offers concessional loans and technical assistance for the rooftop solar projects



# LEVERAGING INVESTMENTS FOR ROOFTOP SOLAR IN MSME

Image Credit: Lumen Advisory & Finance



Parameter	Unit	Loan	Credit Guarantee
Total Loan/Guarantee	\$ M	250	250
Debt facilitated	\$ M	250	886
Capital facilitated	\$ M	357	1265
RTS installation	MW	533	1889
Leverage of corpus to debt mobilized		1	3.54

\* For debt/equity of 70:30

\*\*At INR 50 million per MW (USD 0.67million per MW) (USD/INR is 74.62)

Sample working for 50% CG cover

Credit Guarantee Mechanism will help in creating a market to unlock credit flows and strengthen the capacities of lenders, MSMEs and RESCOs for expansion of rooftop solar in MSME segment in India.

# TECHNICAL ASSISTANCE PROGRAM

Policy & Regulations



**REPORT ON METERING  
REGULATION AND  
ACCOUNTING FRAMEWORK  
FOR GRID CONNECTED  
ROOFTOP SOLAR PV IN INDIA**

April 2019

Forum of Regulators



Capacity Development



Media & Outreach



Consumer testimonials

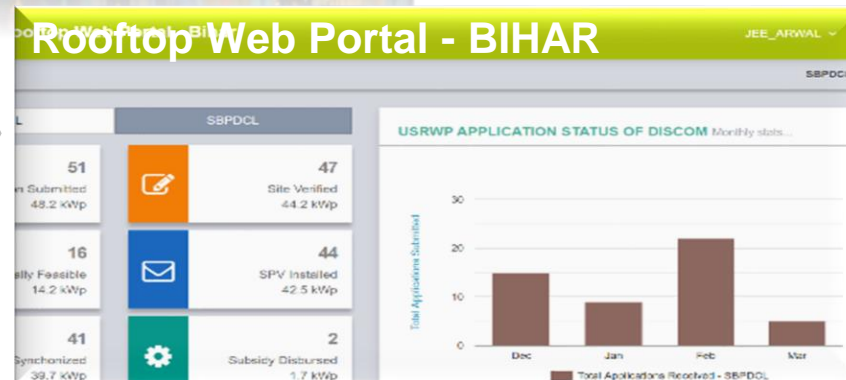


TV Commercials



Demand Aggregation

Process Streamlining



**BID document**

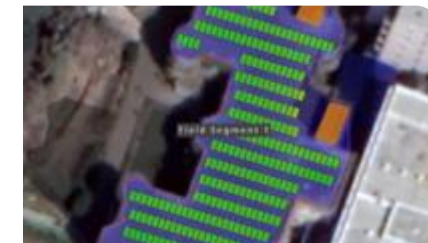
Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company Limited

Tender Document

for

Design, Supply, Installation, Testing, Commissioning and Maintenance of 45 MW of Grid Connected Solar Photovoltaic Power Plants

In Madhya Pradesh



Data room

Goal: Create an enabling ecosystem for supporting the growth of rooftop solar sector

# PREDICTABLE POLICY ON METERING & ENERGY ACCOUNTING

1. Allow **net-metering** until state RTS targets are met, with in-kind banking charges for exported units.
2. Transition to a mechanism that **balances the commercial interest of both consumer & utility**

Image Credit: Proteus technologies

	Net metering	"Net feed-in"	Gross metering, Net billing
Schematic			
Calculation	(Imported energy – exported energy) * consumption tariff	Imported energy * consumption tariff (minus) exported energy * FIT	Imported energy * consumption tariff (minus) (exported energy + self-consumption) * FIT
Electricity Bill	INR 1,600	<b>INR 2500</b>	INR 2000
3. FIT		RTS tariff determination based on MNRE benchmark cost, <i>OR</i> , Average Power Purchase cost (& factoring transmission charges & losses)	

Concept of net feed-in adapted from Auroville Consulting

**Balancing the interest of both consumers and distribution utilities should be cornerstone**

*Assumptions:*

Consumption tariff: INR 8.00 per kWh Net feed-in tariff: INR 5.00 per kWh

Imported energy: 500 kWh; Exported energy: 300 kWh; Self consumed: 100 kWh



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