



PARTNERSHIP TO ADVANCE CLEAN ENERGY-DEPLOYMENT (PACE-D) TECHNICAL ASSISTANCE PROGRAM

The Need for Institutional Capacity Building for Developing Solar Rooftop Markets: *Experience of the USAID PACE-D TA Program in India*

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PACE-D Renewable Energy Key Components



- State Level Policies and Programs
- Solar Rooftop Programs
- RPO Compliance Monitoring
- Solar-Wind Hybrid
- Solar Pumping and Decentralized Renewable Energy

- TA to Indian Railways and Indian Oil for Solar Program
- Energy Storage Demonstration projects- BHEL, REIL and IOCL
- NTPC – Solar Wind Hybrid project

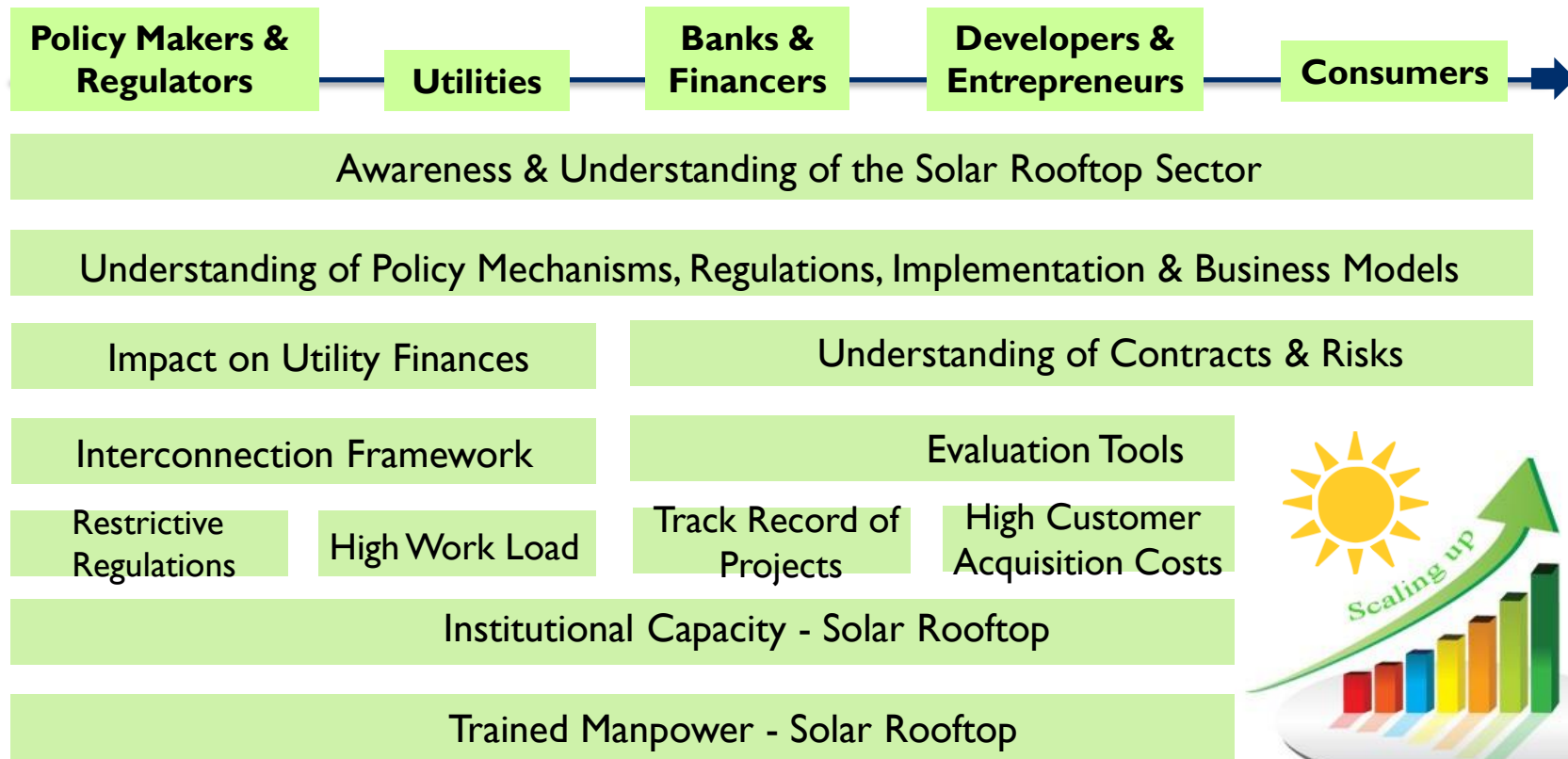


- Solar Energy Training Network
- Training Needs Assessment for the Solar Sector
- Training of Trainers on Solar Rooftop
- Training Programs on Solar Rooftop for Utility Engineers, Banks & Entrepreneurs
- Qualification Pack for Solar Rooftop by the National Skills Development Council

- Solar Rooftop Evaluation Tool
- Infrastructure Debt Fund
- Green Bonds
- Microfinance

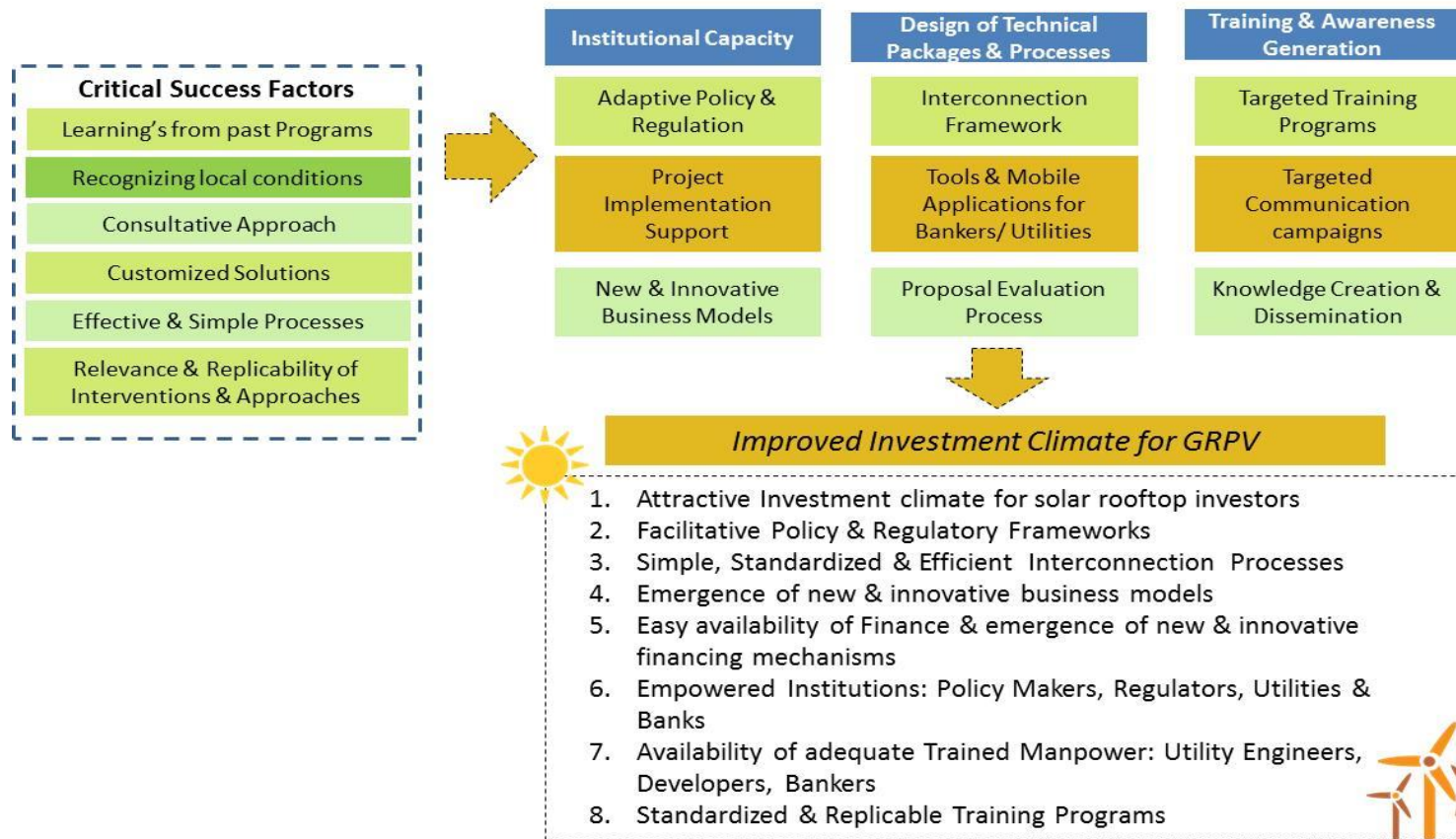


Key Challenges that need to be addressed for Scale-up



PACE-D TA Programs Approach to Solar PV Rooftop Development in India

Areas for Technical Assistance



Creating an enabling ecosystem for the uptake of solar PV rooftop



**Policy &
Regulatory
Support**



**Utility
Support**



**Assistance to
Energy
Users/PSUs**



**Human Resource
Development**



Finance



Solar Rooftop: Policy, Regulatory and Utility Support

Key Activities

Policy and Regulation

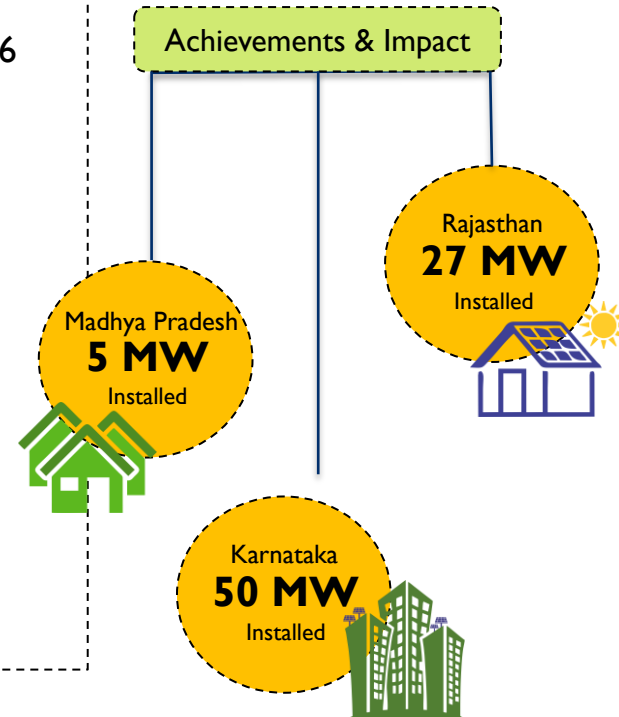
- Madhya Pradesh (MP) Decentralized and Distributed Generation Policy, 2016
- Rajasthan Net Metering Regulations, 2015
- Karnataka Gross Metering Framework, 2016
- Amendment to MP Net Metering Regulations, 2014

Support to Utilities

- Standardized Interconnection Framework for Utilities
- Technical and Process Committees and Training of Utility Engineers
- Tripartite Agreement for Third-Party Solar Rooftop Projects
- Study on Challenges for Solar Rooftop Scale up in BESCOM Region

Support to SDAs

- City-wide 5 MW Solar Rooftop Program in Rajasthan
- Solar Rooftop EPC Procurement in MP



Support to Public & Private Sector Undertakings

Objective

Enhance awareness & capacity of PSUs to procure solar energy



3 Refineries

Barauni, Panipat and Baroda

Corporate Solar
Rooftop Policy

Program Design for
Solarizing Petrol Pumps

Facilitating Indian Oil's
engagement
with MPUVNL and
Indian Oil for solar
park development

BSES

Innovative solar rooftop business models

**Utility-based
business model**
Offer services & earn
revenue

**Community-based
business model**
Allow consumers with
limited rooftop space to
develop solar rooftop
systems on third party sites

3 MW
installed

2.5 MW
under implementation



50 MW

Zonal Railways

100 MW
REMC

Solar RPO Strategy


800 Stations

EPC-based procurement using
CAPEX mode for small solar
rooftop systems

REMC


100 MW
under tender

Solar Rooftop: Knowledge and Tools



Partnership to Advance Clean Energy - Deployment (PACE-D)
Technical Assistance Program

Best Practices Manual for Implementation of State-Level Rooftop Solar Photovoltaic Programmes in India



Solar Rooftop Evaluation Tool for banks and FIs

Risk Rating
Framework for
Evaluating Solar
Rooftop Projects -
IREDA and
Partner Rating
Agencies

TA to Punjab National Bank for entry
strategy on solar rooftop lending



Solar Rooftop: Scale-up in Eight New States

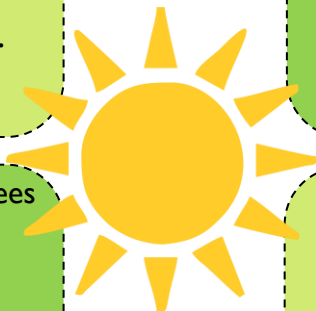
(Haryana, Punjab, Uttar Pradesh, West Bengal, Assam, Maharashtra, Telangana and Andhra Pradesh)

Technical Assistance

- Policy and Regulatory Support to address gaps/challenges
- Net Metering Interconnection Framework
- Interconnection Forms and Formats- application, approval, site verification, etc.

Capacity Building

- Solar Rooftop Technical & Process Committees
- Training of 5,000 Utility Engineers, 1,000 Entrepreneurs & 100 Trainers
- MOOC Framework
- Training Web Portal Framework
- Workshop for Senior Management of Utility
- National Workshop and Study Tours



- Public Outreach – Media campaign in local language – advertisement and brochures
- Monitoring and reporting of capacity addition progress to MNRE
- Unified Web Portal

Implementation Support

- Empanelment procedures for equipment suppliers, EPC contractors, etc.
- Systematic changes for a robust, responsive and efficient interconnection framework and guidelines
- Consultation with ULBs, real estate developers and other stakeholders

Vendors & Process

Solar Energy Training

Objective

Build a skilled solar workforce

Key Activities

- SETNET – 35 Partners - MNRE has aligned SETNET with Surya Mitra program
- Design and development of curriculum and training materials for Utility, Entrepreneur and Banker Training Programs
- Qualification Packs for training programs approved by NSDC
- Model curriculum for all three courses



Knowledge Sharing amongst States

Objective

Exposure to cutting issues, challenges, and opportunities in RE

Three Knowledge Exchange Workshops for States

Representatives from Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Puducherry, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh & Himachal Pradesh

International Study Tour to the U.S. for Government Stakeholders in April 2016

Representatives from MNRE, Ministry of Railways, KREDL, RRECL, and BESCOM



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