



PARTNERSHIP TO ADVANCE CLEAN ENERGY - DEPLOYMENT TECHNICAL ASSISTANCE PROGRAM

A six year bilateral program
(2012 - 2018) led by
the U.S. Agency for International Development
and the U.S. Department of State,
in collaboration with
the Ministry of Power and
Ministry of New and Renewable Energy



KEY COMPONENTS



**RENEWABLE
ENERGY**



**ENERGY
EFFICIENCY**



**CLEANER FOSSIL
TECHNOLOGIES**

CROSS CUTTING ACTIVITIES



**CLEAN ENERGY
FINANCE**



**CAPACITY BUILDING
& TRAINING**

IMPACT



USD 793

MILLION

INVESTMENT
LEVERAGED FOR
CLEAN ENERGY



96,926

PERSON HOURS

TRAINING PROVIDED
ON CLEAN ENERGY



602

MW

RENEWABLE
ENERGY
FACILITATED



100 MW

DEMAND
SAVED



17

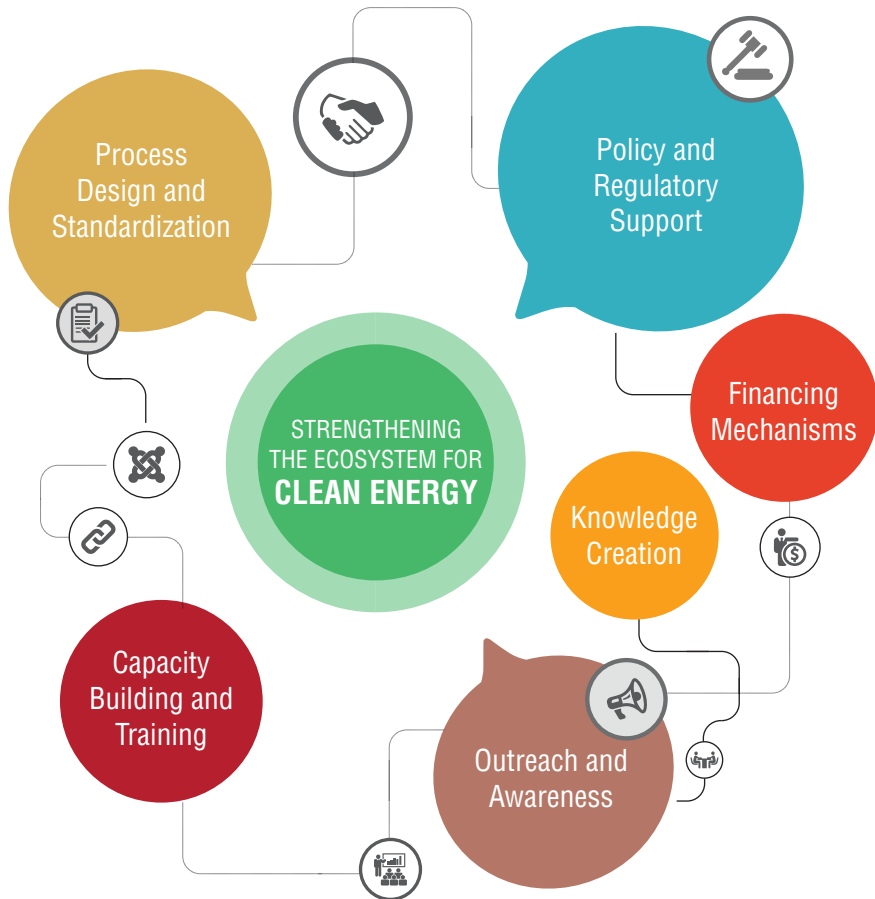
PILOT
PROJECTS



218

TRAINING
PROGRAMS

PROGRAM APPROACH



ENERGY EFFICIENCY

SMART GRID

- Model Regulations
- Pilot Projects - Ajmer and Tripura
- Cost-Benefit Analysis of Pilots
- Standardized training for utility engineers
- Implementation Framework for the National Smart Grid Mission

Utilities have improved capacity to effectively design and implement their Smart Grid projects.

366

**UTILITY ENGINEERS
TRAINED**

BUILDING EFFICIENCY

- Technical update of the Energy Conservation Building Code (ECBC 2017)
- “Green and Net Zero” Vision for the Indian Railways and the Nalanda University
- Knowledge portal - www.nzeb.in
- ECBC implementation in Rajasthan

Implementing ECBC as a minimum energy performance standard is expected to achieve energy savings.

317

**BILLION UNITS kWh
by 2030**

OTHER KEY ACTIVITIES

- Demand-Side Management Regulations and Guidelines
- Support for EE Policy in Karnataka and Rajasthan
- Energy audit in select substations in Rajasthan

Implementing DSM has led to significant energy savings.

4,97,000

**MWh
PER YEAR**

RENEWABLE ENERGY

SOLAR ROOFTOP

- Policy & regulatory framework
- Interconnection framework for utilities
- Support to large energy consumers like Indian Railways
- Training of utilities, entrepreneurs and banks
- Utility-based business models
- Unified Web Portal

Strong eco-system for solar rooftop established in India

225 MW

**SOLAR PV ROOFTOP
INSTALLED**

GENERIC INTERVENTIONS

- Assistance to MNRE on 3 pilot energy storage projects
- Assistance to NTPC on a 250 MW solar-wind hybrid project
- Two solar irrigation pilot projects
- RPO Compliance Framework and Webtool
- Centralized Monitoring Centre

First of its kind initiatives in emerging technologies and knowledge products

322

**SOLAR PUMPS
INSTALLED**

MICROFINANCE

- Capacity building of 7 microfinance institutions to start clean energy lending programs

Low income families can purchase clean energy products and improve the quality of their lives

4,00,000

**CLEAN ENERGY
PRODUCTS SOLD**

CLEANER FOSSIL

SUPPORT TO UTILITIES

- Heat rate improvement for two state utilities
- Software pilots on coal blending and advanced pattern recognition
- Indian Heat to Power Alliance - An industry body for stakeholders

CAPACITY BUILDING

- Best Practices Manual for super-critical power plants
- Training programs on advanced super-critical technologies

Knowledge dissemination on advanced technology and management practices

3.4% & 5.6%

**HEAT RATE
IMPROVED**

Institutional strengthening of state utilities and improved operational efficiency

6,444

**PERSON-HOURS OF
TRAINING**

FINANCE

KNOWLEDGE TOOLS

- Solar Rooftop Evaluation Tool and Credit Rating Framework
- Handbook on Evaluation of Solar Proposals
- Financing Guidelines for Energy Efficiency Projects
- Support to the Bureau of Energy Efficiency in launching two funds

Knowledge capital created for banks and financial institutions

100

BANKERS TRAINED

CAPACITY BUILDING

- Capacity building of financial institutions to issue Green Bonds
- Training programs for banks and financial institutions to evaluate solar rooftop and Smart Grid projects

Financial institutions now have improved capacity to effectively evaluate clean energy projects and raise funds through Green Bonds

USD 394

**MILLION RAISED
THROUGH GREEN BONDS
(IREDA, ReNew Power & EESL)**

CAPACITY BUILDING

STANDARDIZED TRAINING PROGRAMS

- Solar Rooftop: Utility Engineers, Entrepreneurs & Bankers
- Smart Grid: Utility Engineers & Senior Management
- Microfinance: Microfinance institutions & Women Entrepreneurs

Key professionals trained on various interventions

KNOWLEDGE PRODUCTS/TOOLS

- Best Practices Guide for state-level solar rooftop
- Training Needs Assessment of the Indian solar sector
- Centralized Monitoring Centre
- Unified Solar Rooftop Transaction Portal
- Handbook on Evaluation of Solar Proposals

Stakeholders have access to a range of knowledge products on clean energy

Number of Professionals Trained*

4,000

SOLAR PV ROOFTOP

400

SMART GRID

2,100

MICROFINANCE

400

CLEANER FOSSIL

100

CLEAN ENERGY FINANCE

Rounded off Numbers

KEY INTERVENTIONS A SNAPSHOT

- Interconnection Framework
- Net Metering Framework
- Training of Utility Engineers
- Training of Entrepreneurs
- DSM Regulations
- Heat Rate Improvement Pilot
- Energy Storage Pilot

- Net Metering Regulation for Solar Rooftop
- Interconnection Framework
- Training of Utility Engineers
- Smart Grid Pilot
- ECBC Implementation
- Webtool for RPD Compliance
- Support on the Energy Efficiency Policy

- Webtool for RPD
- Case Study for Solar Rooftop

- Decentralized RE Policy
- Centralized Monitoring Centre
- Design of Vendor Manuals
- Solar Rooftop System Procurement Design

- Training of Utility Engineers
- Training of Entrepreneurs
- Assistance Solar Rooftop Procurement Design

- Support on RE and Solar Policy
- Interconnection Framework
- Gross Metering Framework for Solar Rooftop
- End Use Consumer Survey for Solar Rooftop for BESCOM

- Training of Utility Engineers
- Training of Entrepreneurs
- Grid-Connected Solar Irrigation Pilot
- RE Hybrid Policy, Regulation & Pilot Design

- Microfinance Pilot

- Training of Utility Engineers

- Utility Based Business Model for Solar Rooftop

- Smart Grid Pilot

- Support on Solar Policy
- Interconnection Framework
- Unified Solar Rooftop Portal
- Training of Utility Engineers
- Training of Entrepreneurs
- Assistance Solar Rooftop
- Procurement Design

- Interconnection Framework
- Support on Solar Policy
- Unified Solar Rooftop Portal
- Training of Utility Engineers
- Training of Entrepreneurs
- Microfinance Pilot

- Microfinance Pilot
- Solar Irrigation Pilot
- NZEB Pilot Nalanda University

- Interconnection Framework
- Support on Solar Policy
- Training of Utility Engineers
- Training of Entrepreneurs
- Microfinance Pilot

- Coal Blending Pilot

- Energy Storage Pilots

- Interconnection Framework
- Unified Solar Rooftop Portal
- Support on Policy
- Training of Utility Engineers
- Training of Entrepreneurs
- Case Study for Solar Rooftop

- Energy Storage Pilots

Andaman and
Nicobar Islands

PAN-INDIA ACTIVITIES

Model Smart Grid Regulation; Energy Conservation Building Code Update; Indian Heat to Power Alliance; Energy Storage Roadmap; Support to Indian Railways and Indian Oil on Solar Rooftop; Green Bonds; Net Zero Energy Building Portal; Solar Rooftop Evaluation Tool; Smart Grid Implementation Framework for NSGM; EE Financing Guidelines and Manual; Web-based RPD Tool; Capacity Building on Solar Rooftop (Utilities, Banks and Entrepreneurs); and Capacity Building on Smart Grid (Utilities).

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