



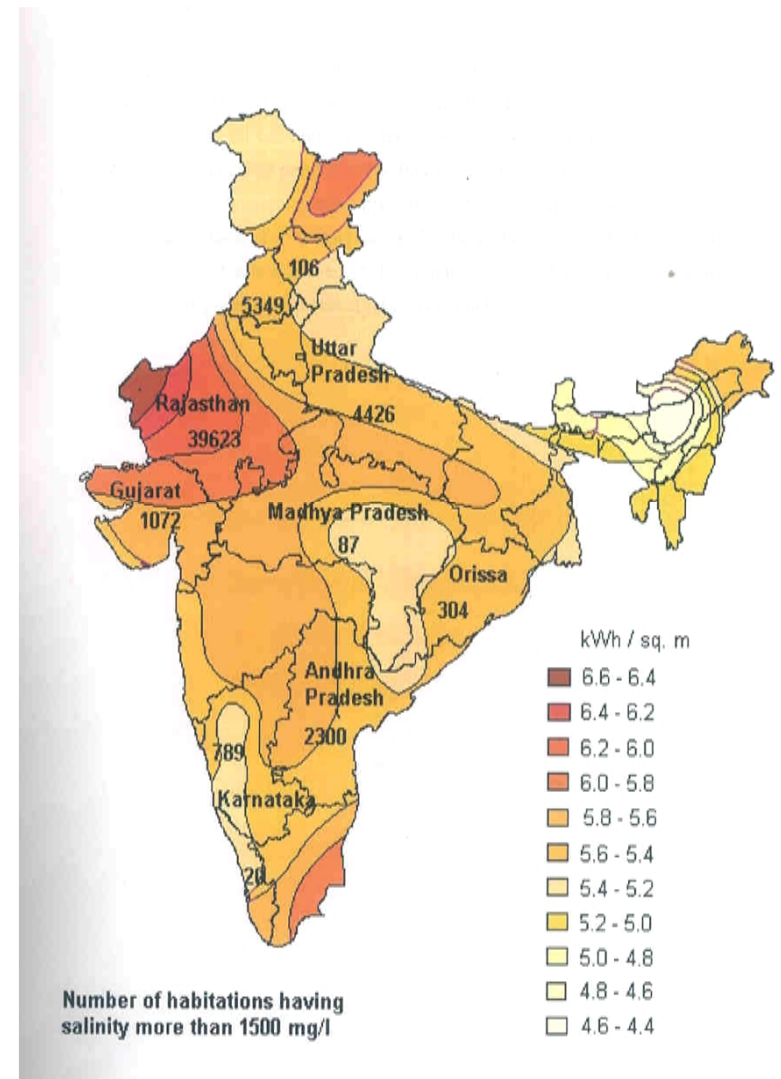
# Jawaharlal Nehru National Solar Mission

**11<sup>th</sup> January, 2010**

# Objective

To achieve volume production at a scale which leads to cost reduction and rapid diffusion and deployment of solar technologies across the country

For this purpose set up enabling policy environment and regulatory framework.



# Road Map

<b>Application segment</b>	<b>Target for Phase I (2010-13)</b>	<b>Cumulative Target for Phase 2 (2013-17)</b>	<b>Cumulative Target for Phase 3 (2017-22)</b>
Grid solar power incl. roof top	1,100 MW	4,000 MW	20,000 MW
Off-grid solar applications (incl. rural solar lights)	200 MW	1,000 MW	2,000 MW
Solar collectors	7 million sq meters	15 million sq meters	20 million sq meters

# Strategy for Phase 1 & 2

Graduated deployment to nucleate critical mass till costs come down and thereafter rapid scale up

- Supporting Utility scale power generation
- Expanding off-grid applications
- Accelerating Research and Development
- Enhancing Domestic manufacturing base

# Solar Power Purchase Policy

- 1,000 MW solar power (connected to 33 KV or more grid) to be purchased by NTPC Vidyut Vyapar Nigam (NVVN)
- Tariff as fixed by Central Electricity Regulatory Commission (CERC)
- Annual tariff review by CERC
- NVVN to bundle equivalent MW capacity of thermal power
- Utilities can meet their RPO by purchase of solar power

# Policy & Regulatory Framework

- CERC has announced tariff for 2009-10:  
PV      Rs. 18.44 per unit  
CSP     Rs. 13.45 per unit  
[www.cercind.gov.in](http://www.cercind.gov.in)
- PPA duration 25 years
- Solar specific RPO starting with 0.25% in 1<sup>st</sup> phase, increasing to 3% by 2022 to be fixed after policy change
- RE Certificate - policy being finalized by Forum of Regulators. Draft on CERC website

# Generation Based Incentive

- ❑ 100 MW capacity solar power projects connected to LT/11 KV grid
  - Residential rooftops (Two way metering)
  - Commercial, institutional, industrial & other rooftops (Net metering)
  - Ground mounted & tail-end grid connected projects (Net metering)
  
- ❑ Central Electricity Authority (CEA) has issued technical guidelines [www.cea.nic.in](http://www.cea.nic.in)
  
- ❑ Broad criterion for selection of projects :
  - Availability of land / roof top; and permissions
  - Technical tie up / DPR
  - Financial capabilities
  - Recommendation of State and willingness to sign PPA
  - Connectivity by utility

# Generation Based Incentive

- Tariff to be fixed by appropriate Electricity Regulatory Commission
- Utility pays minimum of Rs. 5.50/unit - increasing annually @3%
- GBI rate : tariff fixed by CERC minus notional tariff of Rs. 5.5 per unit, with 3% annual escalation
- PPA with concerned utility for a duration as fixed by ERC
- Model PPA to be prepared by Forum of Regulators by March, 2010
- Forum of Regulators to bring out billing and payment guidelines
- GBI payment through IREDA



# Demonstration Projects

- Try out technology configurations, not covered under 1,000 MW capacity
- Price discovery by setting up large capacities for Solar Thermal technologies
- Power Finance Corp to prepare bidding document
- Tariff based bidding to be initiated in 2010
- Committee under former Secretary-IPP to suggest measures to establish solar thermal power industry in the country

# Off - grid opportunity

- Promoting solar home lights and other power applications
- Tackling the below 80°C challenge by promoting solar thermal applications
- Enabling policies and incentives
- Soft loans up to 5% annual interest rate
- 30% subsidy for select applications
- 90% subsidy for niche applications in special category States and in other remote and difficult areas.

# Off-Grid Solar Applications

- 200 MW capacity solar applications in the first phase
- Focus on
  - solar lights
  - rural power supply
  - replacement of diesel
  - telecom towers
  - Solar water heaters
  - solar cooking for institutional use

# Off-Grid Solar Applications

- Support viable business models, which are demand driven
- Multiple channels for rapid up-scaling

## Renewable Energy Service Provider Companies (RESPCs):

- Provide energy services, including design, supply, integration and installation of equipment and systems, maintenance and operation and other related services to consumers.

## Micro finance & other financial institutions acting as Aggregators:

- Institutions involved in consumer finance with customer base in rural/urban areas and outreach through self help groups, etc.
- Can access refinance in conjunction with a tie up with manufacturers/service providers for retail lending

# Off-Grid Solar Applications

## Integrators:

- Offer business solutions by pooling of financing options (carbon finance, government assistance and other sources of funds) ; design financial solutions to clients.
- Offer products and services directly or through manufacturers and service providers.
- Viability gap funding

## Programme Administrators:

- Central and State Government Ministries and Departments and their organisations, State Nodal Agencies, Local bodies, PSUs, Educational/Technical Institutions/Organizations, reputed Non-Governmental Organisations (NGOs). Corporate sector entities may also be involved.

# Off-Grid Solar Applications

- Accreditation : The parameters for accrediting an entity would comprise of
  - Net worth and turnover of the participating entity
  - Credit rating, if any
  - Track record
  - Capacity for outreach
  - Technical personnel for carrying out design installation and O&M functions
  - Tie ups with equipment providers
  - Technical accreditation/ certification of products offered by equipment providers and their traceability
- Consultations in progress to finalize the guidelines

# R&D Strategy

- ***Research at Academic/ Research Institutions*** on materials and devices with long-term perspective
- ***Applied Research*** on existing processes and developing new technologies
- ***Technology Validation*** aimed at field evaluation of materials, components and systems
- ***Development of Centers of Excellence*** on different aspects of Solar Energy.
- **Solar Energy Center to be made Apex Center of Excellence**
- ***PPP*** mode development.
- Support for ***Incubation and Innovation***

# HRD Strategy

- 1000 young scientists and engineers to get trained on different solar energy technologies as a part of long-term R&D and HRD plan
- 100 fellowships to be offered every year to support research students /groups
- Short term course for existing engineers and M. Sc degree holders to make them certified solar installers
- MNRE is working with Ministry of Labour to introduce solar energy related course and teaching material for ITI students in the current academic session



THANK YOU  
<http://mnre.gov.in>