

**PRESENTATION  
OF  
MINISTRY OF NEW & RENEWABLE ENERGY**

**at  
Special Meeting of North Eastern Council**

**on  
17<sup>th</sup> January, 2007  
Pasighat, Arunachal Pradesh**

**New & Renewable Energy in North  
Eastern States**

➤ **Objective :**

To promote efficient technologies which could meet / supplement the energy demands of the people with locally available renewable energy sources

➤ **Major Renewable Energy Resources :**

Hydro Power  
Solar Energy  
Biomass/Biogas

# Small Hydro Power Programme

## ***SMALL HYDRO POWER***

### ➤ Classification based on capacity:

Type	Station Capacity	Unit Rating
Micro	Upto 100 kW	Upto 100 kW
Mini	101 kW to 2000 kW	101 kW to 1000 kW
Small	2001 kW to 25000 kW	1001 kW to 50000 kW

### ➤ Classification based on head:

Ultra Low Head	Below 3 metres
Low Head	Less than 40 metres
Medium / High Head	Above 40 metres

# Strategy for SHP Development

## SHP development envisaged through-

- Private Sector participation
- State Government/SEB
- Central PSUs
- Local Bodies & NGO

## Schemes of SHP Programme

1. Support to States for identifying new sites and preparation of perspective plan for SHP
2. Support for preparation of DPR
3. Subsidy for Public, Private and NGO SHP projects
4. Subsidy for Renovation, Modernisation and Upgrading of existing public sector SHP projects
5. Scheme for languishing public sector projects
6. Water Mills

## Subsidy for SHP projects

1. Subsidy for identification of new sites & perspective plan – upto Rs. 30 lakhs per State
2. Subsidy for preparation of DPR – upto Rs. 5 lakhs
3. Subsidy for R&M – 50% of new projects
4. Subsidy for languishing projects  
– 50% of new projects
5. Watermills –  
 Mechanical – upto Rs. 30,000 each  
 Electrical – upto Rs. 1 lakh each

## Subsidy for SHP projects

States	J&K, HP, Uttarakhand and North-Eastern States	All other States
Subsidy	Rs. 2.25 crores x (C MW) <sup>0.646</sup>	Rs. 1.50 crores x (C MW) <sup>0.646</sup>
Capacity in MW	(Rs. in crores)	(Rs. in crores)
1 MW	2.25	1.50
3 MW	4.58	3.05
5 MW	6.36	4.24
10 MW	9.96	6.64
15 MW	12.94	8.63
20 MW	15.58	10.39
25 MW	18.00	12.00

## Small Hydro Power Programme - Potential & Implementation Status

States	Potential		Installed		Under Construction	
	No.	MW	No.	MW	No.	MW
Arunachal Pradesh	492	1059	64	44	48	41
Assam	90	148	3	2	7	26
Manipur	96	105	8	5	3	3
Meghalaya	98	181	3	30	9	3
Mizoram	88	190	16	15	3	15
Nagaland	86	181	9	21	5	12
Sikkim	68	203	13	39	4	12
Tripura	8	25	3	16	-	-



**SMALL HYDRO POWER PLANT IN HILLY REGION**



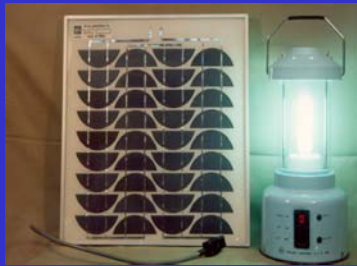
**SMALL HYDRO POWER PLANT IN HILLY REGION**

## **Solar Energy Programme**

# Solar Photovoltaic Programme

Support for :-

- Solar Lanterns
- Solar Home Lighting Systems
- Solar Street Lighting Systems
- Solar Pumps
- Solar Standalone Power Plant



SOLAR LANTERN



Solar Home Lighting System installed & commissioned at  
Athukthang Bari, Tripura



Solar Home Lighting , West Tripura District





**SOLAR POWERED TV IN A VILLAGE**



**SOLAR STREET LIGHTING SYSTEM**

## Solar Photovoltaic Programme Achievement (as on 31.3.2006)

States	Solar Lanterns	Solar Home Lights	Solar Street Lights	Solar Pumps
Arunachal Pradesh	4937	1270	738	1
Assam	541	2787	98	45
Manipur	3883	1660	370	12
Meghalaya	4875	1540	598	19
Mizoram	5812	2245	315	37
Nagaland	95	143	271	0
Sikkim	720	10215	152	0
Tripura	20805	2238	760	25

## Solar Photovoltaic Programme Targets

States	Solar Lanterns		Solar Home Lights		Solar Street Lights	
	2005-06	2006-07	2005-06	2006-07	2005-06	2006-07
Arunachal Pradesh	5000	500	2600	4000	50	0
Assam	5000	1000	500	2500	50	50
Manipur	5000	500	1400	500	0	0
Meghalaya	20000	8000	3200	1000	50	100
Mizoram	5000	1000	800	700	0	0
Nagaland	4000	1000	200	1000	0	0
Sikkim	2000	2000	1000	1200	50	25
Tripura	15000	500	1500	1000	200	0
Total	61000	14500	11200	11900	400	175

# Solar Thermal Programme

Support for :

- Box Type Solar Cookers
- Concentrating Cookers
- Steam Cooking Systems
- Solar Water Heaters
- Solar Dryers / Air Heaters



**BOX SOLAR COOKER**



**DISH SOLAR COOKER**



**DOMESTIC SOLAR WATER HEATERS**



**SOLAR HOT WATER SYSTEM AT A HOTEL  
IN MAHABALIPURAM**

## **WIND SOLAR HYBRID SYSTEM**

### **CAPACITY:**

**620 watts Hybrid System**

- **Sports Authority of India  
Complex, Namchi, South  
Sikkim**
- **Assangthang Model  
Village, South Sikkim**



## **Biomass / Biogas Programme**

### **National Biogas and Manure Management Programme**

#### **Provisions:-**

- Rs. 11,700 central financial assistance per plant except for Assam where it is Rs. 9,000 per plant.
- Rs. 800 per plant turnkey job fee except for Assam where it is Rs. 700 per plant
- Biogas Development and Training Centre at Indian Institute of Technology, Guwahati for supporting technical training and publicity.

## National Biogas and Manure Management Programme - Status

States	Estimated Potential	Achievement upto 31.3.2006
Arunachal Pradesh	7500	2210
Assam	307700	58667
Manipur	38700	2128
Meghalaya	24000	4226
Mizoram	5000	3470
Nagaland	6700	2617
Sikkim	7300	5574
Tripura	28500	2442



FAMILY SIZE BIOGAS PLANT

## National Biogas and Manure Management Programme.



**Family size ( 2 Cubic Meters) biogas plants in rural area of Sikkim.**

## Biomass Gasifier Programme

- Biomass Gasifier converts biomass into producer gas.
- Producer gas is directly burnt for heating applications
- Producer gas is cleaned , filtered and mixed with diesel to run dual-fuel engine
- 100% producer gas based engines have been developed and are being deployed for field evaluation.
- Biomass gasifier of capacity 20 kW, 50 kW and 100 kW have been set up in Arunachal Pradesh (1580 kW), Assam (120 kW), Mizoram (200 kW), Nagaland (280 kW) and Tripura (1100 kW)



**20 kW GASIFIER FOR COOKING APPLICATION**



**500 kW BIOMASS GASIFIER SYSTEM AT SUNDERBANS**

# **Remote Village Electrification Programme**

## **Remote Village Electrification Programme**

### **OBJECTIVES :**

- Creation of capability for availability of minimum 1 kWh per household per day in un-electrified villages/hamlets using various locally available renewable energy resources
- Wherever adequate resource is not available, to provide basic lighting facility to all the households through solar home lighting system

## **Need for village electrification programme in North East**

- Over 7,500 villages are unelectrified.
- 3,943 villages are remote and non-feasible for grid power.
- About 81.54% of the 47.04 lakhs households have no electricity.
- Massive village electrification programme is being undertaken.
- Tapping available natural resources and available technology.

## **Remote Village Electrification Programme**

### **Procedure:**

- Identification of un-electrified remote village/hamlet by State.
- List be sent to REC
- REC identifies remote villages which are not likely to be electrified through grid.
- Identified list sent back to States for DPR
- DPRs are prepared by States
- DPRs examined in MNRE and project sanctioned

## Remote Village Electrification Programme - Status

States	Remote Village Identified by REC	Sanctioned by MNRE	Completed so far
Assam	493	72	39
Arunachal Pradesh	145	286	118
Manipur	57	177	137
Meghalaya	158	27	25
Mizoram	-	20	20
Nagaland	-	-	-
Sikkim	-	13	5
Tripura	-	62	31

## Remote Village Electrification



## **ISSUES & OBSERVATIONS**

### **Reasons for Slow Growth of Renewable Energy in N E States**

- Professional Manpower base, HRD and capacity building
- Project/ programme formulation
- Weak delivery mechanism
- Operation and maintenance mechanism
- Problem of State share of funds
- Private sector investment

## **Need for Renewable Energy Power Policy in NE States**

- Attractive power purchase rate, with escalation clause to take care of inflation as well as long term viability
- Assurance of payment by the Power Depts/SEBs for power purchased by them
- Wheeling and banking facilities at nominal charges
- Standard Power Purchase Agreement
- Clearly defined evacuation and interconnection facilities

## **Major Initiatives Taken**

- Special training programmes for officials from NE region at IIT, Guwahati and other places.
- Allocating 10% of Budgetary Support for development of North East including Sikkim.
- Higher central financial assistance for major programmes in NE States.
- Supported for setting up of State Nodal Agencies.
- High level Teams of MNRE visit NE States regularly. Secretary level review meeting of NE States held on 3<sup>rd</sup> November, 2006 at Guwahati .

## Awareness & Public Participation

States	Energy Parks		Solar Shops	District Advisory Committees
	District Level	State Level		
Arunachal Pradesh	6	1	6	14
Assam	12	1	1	23
Manipur	10	-	1	9
Meghalaya	6	1	0	7
Mizoram	7	1	2	8
Nagaland	5	1	2	11
Sikkim	5	-	1	4
Tripura	10	1	2	4
Mobile exhibition van has been provided to each State. Number of exhibitions have also been sanctioned.				

## Strategy and Approach

- Need for village electrification.
- Strengthening of on-going programmes for grid-capacity addition.
  - SHP needs to be strengthened, which is a critical range for the development of grid power in NE.
  - Biomass can also be used for large power projects to add to the grid capacity.
  - Renewable energy power policy
- Stand alone lighting programme.

## **Strategy and Approach**

- **Cooking energy needs programme.**
- **Support and other areas of activity.**
  - Resource Assessment and survey & investigation activity.
  - Survey and investigation should be taken up for identification.
  - Specialized trainings.

## **Strategy and Approach**

- **Micro Enterprise.**
  - Active and well organized Women groups in North East should be associated with programme implementation.
  - Training, publicity and motivation should also be used to create the spirit of entrepreneurship with micro-enterprise.
  - A special incentive to be provided for development of local manufacturing facility for renewable energy equipments.
- **Credit Mechanism through IREDA.**



*Thank You*