

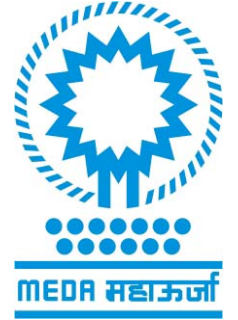
MEDA  
महाऊर्जा

Maharashtra Energy Development Agency



सत्यमेव जयते

MNES



# INCENTIVES FOR PROMOTING RENEWABLE ENERGY AND ENERGY EFFICIENCY TECHNOLOGY

BY

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**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

(An ISO 9001:2000, 14001:1996 Organisation)

## OBECTIVES OF MEDA

- Promote and Develop, Non-conventional, Renewable and Alternate Energy Sources and Technologies
- Implement Energy Conservation Act , 2001 and related schemes
- Assist GOI and GOM in Renewable Energy Programmes
- Install Demonstration Projects
- Pursue Power Projects, based on Renewable Energy
- Rural Electrification through Renewable Energy (remote villages)

## PRESENT POWER SCENARIO OF THE STATE

- Largest power generating State in India. Total installed Capacity – 15152 MW
- Leading industrial State and having nearly 3,00,000 L.T. industries and 8700 H.T. industries
- 88.4 % of generation is from Fossil Fuels
- Maximum demand 13418MW with 2496 MW load shading recorded during 2002-03
- Energy shortage of 13.4 % or 11680 MUs for 2002-03
- CEA projected an average growth rate of 5.9 % for the period upto 2017

*(Source : 16<sup>th</sup> electric power survey)*

# INSTALLED POWER CAPACITY IN MAHARASHTRA

(As on 31/03/2004)

## CONVENTIONAL POWER :

S.N.	ITEM	INSTALLED CAPA. (MW)
1	MSEB	9771*
2	DPC(IPP) (*)	728
2	TATA Power	1774
3	BSES	500
4	Central Share for Maharashtra (NTPC & NPC)	2379
	<b>TOTAL</b>	<b>15152</b>

\* Inclusive of Small hydro power projects

(\*) DPC -728 MW is not available from 29.05.2001 and hence installed capacity is 14420 MW

## NONCONVENTIONAL POWER :

S.N.	ITEM	INSTALLED CAPACITY(MW)
1	WIND	407.28
2	BAGASSE CO-GENERATION	45.5
3	BIOMASS	-
4	SMALL HYDRO	206.33
5	INDUSTRIAL WASTE	6.126
	<b>TOTAL</b>	<b>665.24</b>

## FOSSIL FUELS-WORLD & INDIA'S RESERVES

Fossil Fuel	World's Reserves (Proven)	India's Reserves (Proven)	% of World Reserves	Remarks on Indian Reserves
Coal	984 billion tonnes	84,414 million tonnes	8%	* will last for 200 years
Crude Oil	140.4 billion tonnes	658 million tonnes	0.46%	will last for 16 years
Natural Gas	144.8 trillion cubic meter	628 billion cubic meters	0.43%	will last for 23 years

## DO YOU KNOW?

- 1 kWh of electricity generated at thermal power station emits
  - 3015 Kcal of waste heat
  - 1Kg of CO<sub>2</sub>
  - 0.6 Kg of NO<sub>2</sub>
  - 0.09 Kg of CO
  - 0.007 Kg of SO<sub>2</sub> and generates 0.201 Kg of flash ash.
- 1 MW power plant cost is near about Rs 4.5 to 5 Crores and another cost of about Rs 2 Crores for T & D.
- To set power plant it takes ...5 years, to set up transmission lines it takes...1year, To plan energy conservation it takes ...1month,
- To promote energy conservation it takes ...1 hour, But to save energy it needs only 1second.

## WHY RENEWABLE ENERGY AND ENERGY CONSERVATION?

- Energy is essential input for Economic Development. The more the energy use, more developed is the Nation
- For any sustainable development programme, use of renewable energy sources and efficient use of all energy resources are of paramount importance
- Renewable energy sources are abundantly available and they are free to use.
- Renewable energy sources are environment friendly
- Renewable energy plays a very vital role in energy conservation
- Renewable energy sources and energy conservation reduce high oil import burdens of country.
- One unit of energy saved at the consumption level avoids 2.5 to 3 times fresh capacity addition
- Savings through efficient use of energy can be achieved at less than one-fifth of the cost of fresh capacity creation

## POTENTIAL FOR POWER GENERATION FROM RENEWABLES IN INDIA & MAHARASHTRA

S.N	RENEWABLE SOURCES	POTENTIAL IN INDIA MW	POTENTIAL IN MAHARASHTRA MW
1	WIND	45000	3650
2	SMALL HYDRO	15000	599.47
3	BIOMASS/ AGRO-WASTE	16000	781
4	BAGASSE BASED COGENERATION	3500	1000
5	URBAN & MUNICIPAL SOLID/LIQUID WASTE-TO- ENERGY	1700	287
6	INDUSTRIAL WASTE	1000	350
7	TOTAL	82200	6630.47

## RE POTENTIAL & ACHIVEMENT IN MAHARASHTRA ( AS ON 31-03-2004 )

Source	Wind	Small Hydro	Bagasse Co-gen	Biomass	Urban & Municipal Solid Waste	Industrial Waste	Total
Potential in MW	3650	599.47	1000	781 *	287	350	6630.47
Achievement as on 31.03.2003 in MW	407.285	207.08 **	45.5	00	0.00	6.126	665.24
% Achievement against potential	11.15%	34.5%	4.55%	0%	0%	1.75%	10.03%
Projects in pipeline MW	5 (1 Proj.)	15.25** (4 proj.)	364 (24 proj.)	212 (25 proj.)	56.4 (4 Proj.)	0 (Nil)	566.40

\* **Biomass Assessment Studies Put Annual Biomass Availability At 78.12 Lakhs M. Tones ( For 1 MW Power Plant Annual Requirement of Biomass is 10,000 M.T.)**

\*\* **Completed Or Planned By Irrigation Department.**

## POTENTIAL FOR INVESTMENT IN MAHARASHTRA

SR. NO.	ITEMS	TOTAL POTENTIAL (IN MW)	UNTAPPED POTENTIAL (IN MW)	COST (RS.CRORES/MW)	INVESTMENT (RS. IN CRORES)
1	WIND	3,650	3242.71	4.5	14592.21
2	MSW	100	100	8.0	8,00.00
3	BAGASSE CO-GEN	1,000	954.5	3.5	3340.75
4	BIOMASS/AGRO-WASTE	781	781	3.5	2733.50
5	SMALL HYDRO	599.47	392.39	6.0	2,354.34
	TOTAL				23820.80

## INVESTMENT OPPORTUNITIES FOR RE

- **Power Generation technologies-** Wind power, Small Hydro, Biomass Power, Biomass Gasifiers, Biomass cogeneration, Energy from Waste, Solar Photovoltaic Power (Grid connected)
- **Solar Energy Technologies-** Solar Photovoltaic, Solar Thermal, Stand alone wind energy & hybrid system
- **Rural energy technologies-** Biogas, improved Chulhas (cook stoves)
- **New technologies-** Chemical sources of energy (fuel cells), Hydrogen, geothermal energy, alternative fuels for surface transportation, tidal energy & bio diesel

## POLICY MEASURES AND INCENTIVES FOR RE

The policy framework and incentives on offer are

- Fiscal and financial incentives
- Wheeling, banking, third party sale and buy-back facility by State Electricity Boards
- Capital subsidies in certain states
- Soft loans from IREDA

## **FISCAL AND PROMOTIONAL INCENTIVES FROM GOVERNMENT OF INDIA (GOI)**

The following fiscals and promotional incentives are available from Govt.

### **Wind Power Technologies**

- Concessional import duty on specified wind turbine parts
- 80% depreciation in the first year
- Relief on Sales Tax
- Exemption on Excise Duty
- Five year Income tax holiday
- Loans through IREDA

## FINANCIAL ASSISTANCE /INCENTIVES FOR SETTING UP OF WIND POWER

Programme	Central Financial Assistance
Wind Monitoring Station	Cost of Wind monitoring stations is shared by MNES and state nodal agencies 80% - MNES 20% - State
R& D Projects	R&D projects related to wind machines are directly sponsored by MNES to R&D Institutions
Land based Demonstration projects	60% of cost of wind generators on benchmark cost of Rs 3.5 crores per MW
Off shore demonstration project	MNES shall provide grant in aid for feasibility study and establishment wind power projects
Small wind energy systems and hybrid system	For community use - 75% of ex-works cost/ upto Rs2.0 lakhs per KW For individual , industrial users and R&D institutes – 50% ex-works cost / upto Rs 1.25 lakhs per KW
Wind Pumps:	Rs. 24,000-32,000 per Wind Mill depending on design of Wind Mill.

## FINANCIAL ASSISTANCE /INCENTIVES FOR SETTING UP OF BIOMASS POWER/COGENERATION PROJECTS

<b>Bagasse Co-generation (Commercial Projects)</b>				
	<b>Schemes</b>	<b>Pressure Configuration</b>	<b>Interest Subsidy</b>	<b>Maximum Subsidy (Rupees)</b>
1.	Projects by Cooperative/Public/ Joint Sector Sugar Mills	40 bar & above	3%	4.00 Cr. Per project
		60 bar & above	4%	
		80 bar & above	5%	
		100 bar & above	6%	
2.	Projects in IPP Mode in Cooperative/Public Sector Sugar Mills	60 bar & above	2%	
		80 bar & above	3%	
		100 bar & above	4%	
3.	Projects by Private Sector Sugar Mills	60 bar & above	1%	
		80 bar & above	2%	
		100 bar & above	3%	

Minimum floor rate of interest 6% for category -I

Minimum floor rate of interest 8% for category -II & III

## BIOMASS POWER/COGENERATION PROJECTS

<b>Biomass Power</b>				
	<b>Schemes</b>	<b>Pressure Configuration</b>	<b>Interest Subsidy</b>	<b>Maximum Subsidy (Rupees)</b>
1.	Direct Combustion, including captive power projects	60 bar & above	2%	2.00 Cr. Per project
		80 bar & above	3%	
2.	Commercial Projects (Atmospheric Gasification including captive power)	--	2%	
3.	MW-Scale projects with 100% Producer Gas Engines	Capital Subsidy of Rs.1.00 Cr./MW		
4.	Advanced Biomass Gasification	Capital Subsidy of Rs.1.00 Cr./MW		8.00 Cr. Per project

## ENERGY FROM URBAN, MUNICIPAL AND INDUSTRIAL WASTES

SN	Programme/Scheme	Amount of Subsidy
1	Interest Subsidy for projects based on industrial waste	For reducing rate of interest to 6% (4% to special category states) on the loan availed from IREDA or other financial institutes
2	Incentive to State Nodal Agencies for their coordinated actions/ monitoring etc.	Rs. 5.00 lakhs per MW for projects related to waste to power Rs.2.5 lakhs per MW for projects related to Waste to Biogas or Biogas to Power
3	Interest Subsidy projects based on Urban and Municipal waste	IREDA provides term loans upto 70% of project cost at 12% (Upto 3MW) and 12.5% (Above 3 MW and Upto 6 MW)

## SMALL HYDRO POWER

Sr. No.	Programme / scheme	Applicable installed capacity	Applicable subsidy
1	Promotional incentives for DSI and preparation of DPR for notified hilly regions (For Government/ Private/ Joint Sector)	Upto 1 MW	Rs.1.5 lakhs
		Above 1 MW & upto 10 MW	Rs.2.5 lakhs
		Above 10 MW & upto 25 MW	Rs.4.00 lakhs
2	Subsidy scheme for commercial Small Hydro Projects by private/ joint sector in notified hilly regions.	Upto 100 KW	Rs.20,000/- per KW or 30% of the project cost whichever is lower
		From 101 KW to 999 KW	Rs.20 lakh+Rs14400/- per KW or 30% of the project cost whichever is lower
		From 1 MW upto 25 MW	Rs.1.5 crores+ Rs25 lakhs per MW or 30% of the project cost whichever is lower

Cont...

## SMALL HYDRO POWER

3	Subsidy for Small Hydro Projects in notified hilly regions (For Government/ SNA)	Upto 100 KW	Rs.40,000/- per KW or 60% of the project cost whichever is lower
		From 101 KW to 999 KW	Rs.40.29/- lakh per KW or 60% of the project cost whichever is lower
		From 1 MW upto 25 MW	Rs.3.5 crore per MW or 60% of the project cost whichever is lower

## VILLAGE ELECTRIFICATION

Central financial Assistance (CFA) upto 90% of the cost of the projects will be provided as grant by MNES with specific benchmarks as applicable in respect of technologies adopted for electrification.

**CFA for SPV system The CFA is for systems with 10 year AMC.**

<b>SPV system</b>	<b>90% of the cost subject to a maximum of</b>
Solar Home Light System (Model - 1)	Rs. 5,020/-
Solar Home Light System (Model - 2)	Rs. 9,590/-
Solar Home Light System (Model - 3)	Rs. 9,590/-
Solar Home Light System (Model - 4)	Rs. 17,720/-
Solar Home Light System (Model - 5)	Rs. 17,720/-
Solar Street Lighting System	Rs. 19,180/-
Power Plants	Rs. 2,50,200/ kW
Power Plants with distribution line	Rs. 3,00,600 / kW

### Electrification through Small Hydro Projects

<b>Region</b>	<b>Upto 100 KW</b>	<b>Above 100 kW &amp; upto 999 kW</b>
Notified hilly regions of other States and Islands	90% of the project cost limited to	
	Rs. 60,000 / kW	Rs. 60.00 lakhs + Rs. 43,250 / kW
Plain and other regions of all other States	90% of the project cost limited to	
	Rs. 45,000 / kW	Rs. 45.00 lakhs + Rs.29,250 / kW

## VILLAGE ELECTRIFICATION

### Electrification through Biomass Gasifier Projects

CFA in the form of capital subsidy on pro-rata basis to the extent 90% of the cost of Rs. 15.0 lakhs for a basic package for a 50 kW project covering biomass gasifier system, housing and local distribution. An average size of 50 kW has been considered with unit size of 25 kW capacity modular upto 100 kW, and a special rating of 10 kW. For cluster of villages, projects upto 1 MW can be considered.

Additional Rs. 1.50 lakh per 50 kW plant to be provided for regular availability of biomass, including collection, processing and storage and operation and maintenance, including AMC for 5 years after the warranty period. In addition, for internal wiring, beneficiary will be provided micro-credit facility for three points @ Rs. 1500/- per household.

## SOLAR PHOTOVOLTAIC GRID-CONNECTED POWER PROJECTS

Programme/Scheme	Amount of Subsidy
<p><b>Solar Photovoltaic Grid-connected Power Projects:</b> Solar Photovoltaic Grid-connected Power Projects for niche applications, namely, voltage support systems at the tail-end of the grid in rural areas and rooftop peak-shaving systems in Urban Centers. Projects to be implemented by SEBs, SNAs and Private Electric Utilities only.</p>	<ul style="list-style-type: none"> <li>• 2/3<sup>rd</sup> of the project cost subject to a maximum of Rs.1.2 crores per 100 KW.</li> <li>• Upto Rs.1.00 lakh for preparation of Detailed Project Report.</li> <li>• 2.5 % of MNES share subject to maximum of Rs. 5.00 lakh for O&amp;M, data compilation etc.</li> </ul>

## SOLAR PHOTOVOLTAIC

Sr. No.	SPV System	Central Subsidy
1.	Solar Lantern	Loan upto 85% of cost with 5% interest rate from IREDA
2.	Home Lighting Systems / Solar Home System	Rs. 2400/- to Rs 9840/- or 50 % of ex-works cost, which ever is less
3.	Street Lighting System	Rs.9100 to Rs 10660 or 50 % of ex-works cost, which ever is less
4.	Power Plants & Other systems	Rs. 119000 to Rs 139000/- per kWh of PV Array Capacity or 50 % of the ex-works cost of the project, which ever is less.
5	Building Integrated Photovoltaic (BIPV)	80% of cost with 5% interest rate is from IREDA

For different models and different AMC period

## SOLAR THERMAL SYSTEMS

### 1. Subsidy:

Sr. No.	Programme/Scheme	Amount of Subsidy
1	Demonstration Programme on Solar Water Heating Systems- For NE, Islands, J&K and Sikkim Special Demonstration Programme	Rs.4000/- per sq. m. of installed collector area
2	Aditya Solar Shops  Establishment of shops owned by State Govt./Agencies	Financial assistance: <ul style="list-style-type: none"> <li>• Rs.3-5 lakh non-recurring.</li> <li>• Rs.0.50 lakh recurring for two years.</li> <li>• Rs..50 lakh Publicity per shop per year</li> </ul>

## 2. Interest Subsidy:

Technology	Implementing Organization	Category of end-user	Rate of Interest
Solar water heating system (up to 5000 liters capacity of hot water at 60-80 °C)	Banks / IREDA etc.	Individual, institution, association, small business establishment	5%* (to end user)
Solar water heating system (up to 2000 liters capacity)	IREDA (through financial intermediaries). IREDA provides loans to financial intermediaries @ 2.5% rate of interest	Individual, institution, association, small business establishment	5%* (to end user)

## 2. Interest Subsidy:

Solar water heating system (any capacity), Solar air heating system, solar desalination system, solar swimming pool	IREDA (direct or through financial intermediaries)**	Institutions, trusts, charitable organizations etc. (non-profit organizations)	5% *
Solar water heating system (any capacity), solar air heating system, solar desalination system, solar swimming pool	IREDA (direct or through financial intermediaries)**	Industry, hotels and other commercial organizations (profit making)	8.3%
*End-users (other than individuals) will have to give an undertaking that no depreciation allowance will be claimed under income tax rules.			
** The financial intermediaries may charge a spread up to 4% over the rate charged from them by IREDA.			

## BATTERY OPERATED PASSENGER VEHICLES

S.N.	Programme/Scheme	Amount of Subsidy
1	<p>Battery Operated Passenger Vehicles (BOPVs):</p> <p>10 seaters and above with speed of 40 KM/hour</p> <p>8 seaters and above with speed of 45 KM/hour</p> <p>4 seaters and above with speed of 50 KM/hour</p>	<p>33% of cost or Rs3.5 lakhs whichever is less</p> <p>33% of cost or Rs 80,000/- whichever is less</p> <p>33% of cost or Rs 75,000/- whichever is less</p>

## NEW TECHNOLOGIES AND ENERGY PARK

Fuel-Cell Technology	MNES is implementing R&D and demo project on fuel cells at research, academic and educational institutes, national laboratories, universities and industries.
Hydrogen Energy Programme	MNES will implement R&D and demo projects on production, storage, transport and utilization of hydrogen as a fuel for stationery, portable and other devices / applications.
Alternative fuel for surface transport programme	MNES will implement R&D projects on development of advance batteries super capacitors and components of Electric vehicles which are environmentally benign and reduce consumption of oil.
District Level Energy Park	<p>The MNES shall provide financial assistance for setting energy park by educational institutes, R &amp; D and training institutes, Krishi Vigyan Kendra, corporate and industries association Public Places, historical places. The cost of Energy Park shall be in the range of about Rs. 1.00 lakh to Rs. 10.0 lakh with AMC. The CFA as per following will be available.</p> <p>For all other States - 75% (MNES) : 25% (Institutions)</p> <p>For 2<sup>nd</sup> Energy park in district and for Corporate and ind. association - 50% (MNES) : 50% (Institutions)</p>
State Level Energy Park	MNES will provide financial assistant of maximum Rs. 1.00 crore for only one State Level Energy Park.



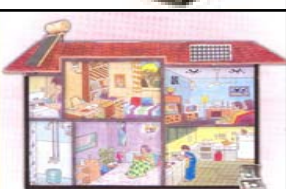

## **MEDA - "THE DESIGNATED AGENCY"**

In exercise of power conferred under clause (d) of section 15 of Energy Conservation Act, the Govt. of Maharashtra has designated Maharashtra Energy Development Agency (MEDA) to coordinate, regulate & enforce the provisions of Energy Conservation Act and also for the implementation of schemes under the Act within the State of Maharashtra vide G.R. ESA/1002/CR-8192-NRG5 dated 12th March 2003.

Therefore it is MEDA's prime responsibility to carry out all energy conservation activities in the state of Maharashtra. MEDA will play following important roles.

- **AS A DEVELOPMENTAL AGENCY,**
- **AS A FACILITATOR AND**
- **AS A REGULATORY BODY**

## POTENTIAL FOR ENERGY CONSERVATION IN STATE

SECTOR / INDUSTRY		CONSERVATION POTENTIAL (%)	POSSIBLE SAVING IN MUS (ANNUAL)
Industrial Sector		Up to 25	4359
Agriculture Sector		Up to 30	2619
Domestic Sector		Up to 20	2380
Commercial Sector		Up to 30	1318
		<b>TOTAL</b>	<b>10676*</b>

## FINANCIAL INCENTIVES FOR ENERGY EFFICIENCY

- To promote energy conservation in all sectors viz industrial, commercial, domestic, agriculture various incentives are offered by utilities, state and central government.
- For conducting energy audit at industry , commercial and government buildings financial assistance is provided by various organizations like MEDA, PCRA.
- To implement energy conservation measures IREDA provides soft loan at subsidized interest rates.
- Utilities like MSEB provides TOD tariff and power factor incentives for promoting energy conservation in Maharashtra.
- For promoting the concept of Solar Passive Architect, MNES GoI provides financial assistance to Govt, Semi-Govt & NGOs of 10% of estimated cost maximum upto Rs 10 lakhs for constructing new building.

## SAVE ENERGY PROGRAMME OF MEDA

As on March 2004 MEDA has implemented Save Energy Programme in 400 industries and save energy of 30 crores.

### Objectives:

- To promote energy conservation in all sectors viz industrial, commercial, domestic, agriculture.
- To carryout energy audits through empanelled consultants
- To help industries to reduce electricity, coal and oil consumption used for production activities
- To carryout energy accounting, qualitative management control and sequential continuous monitoring through empanelled consultant/with the help of industry
- To encourage energy conservation with small and medium investment

## ASSISTANCE FROM MEDA

Programme	Subsidy (Rs.)
<b>A) Save Energy Programme:-</b>	
Option – I	
Energy Audit Study for Government Buildings	50,000/- (Maximum)
Option -II	
Energy Audit Study for Commercial Buildings	
➤ Annual Energy Bill less than Rs.5.00 lakhs-	10,000/-
➤ Annual Energy Bill above Rs. 5.00 lakhs-	15,000/-
Option -III	
Energy Audit Study for Industries	
➤ Annual Energy Bill less than Rs.72.00 lakhs-	15,000/-
➤ Annual Energy Bill above Rs. 72.00 lakhs-	25,000/-

MEDA  
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Maharashtra Energy Development Agency



**ENERGY IS LIFE**

**JOIN**



**HANDS**

**IN**

**CONSERVING IT'**

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