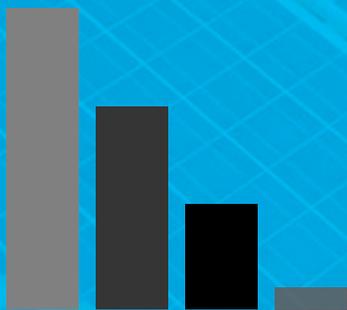
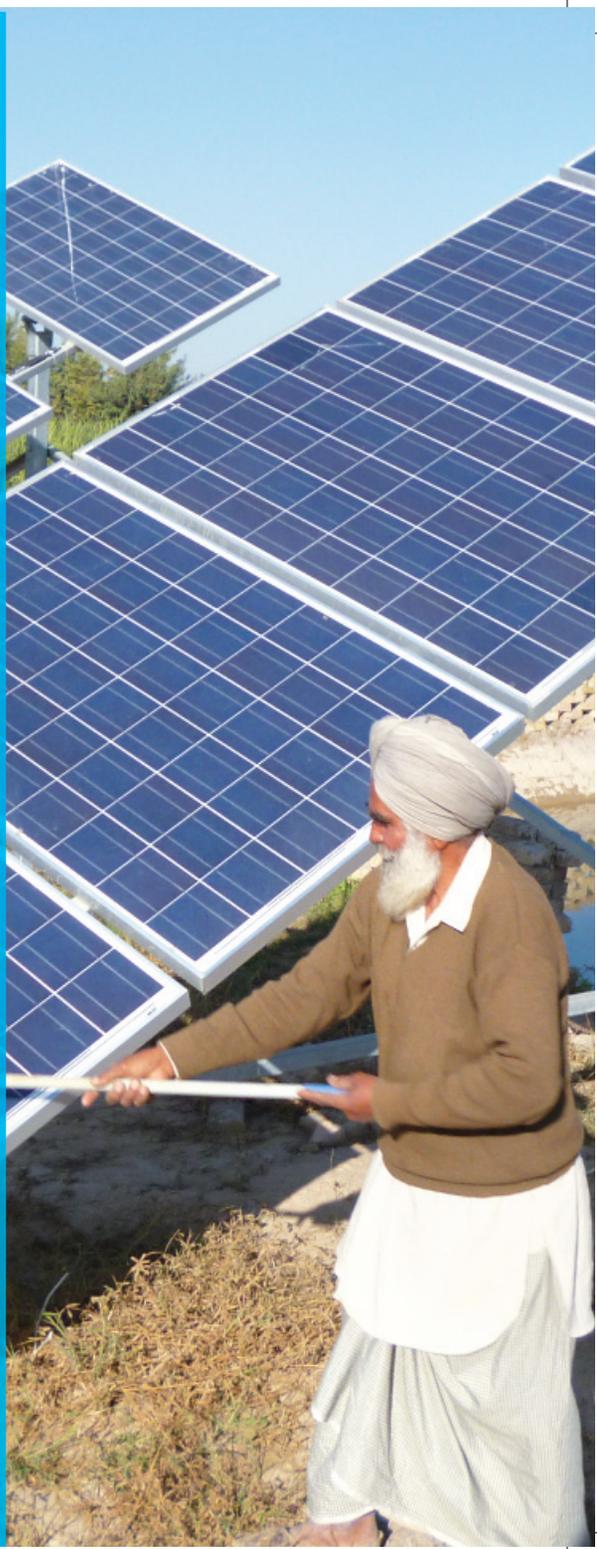

ENERGY ACCESS & RENEWABLE ENERGY



Factsheet



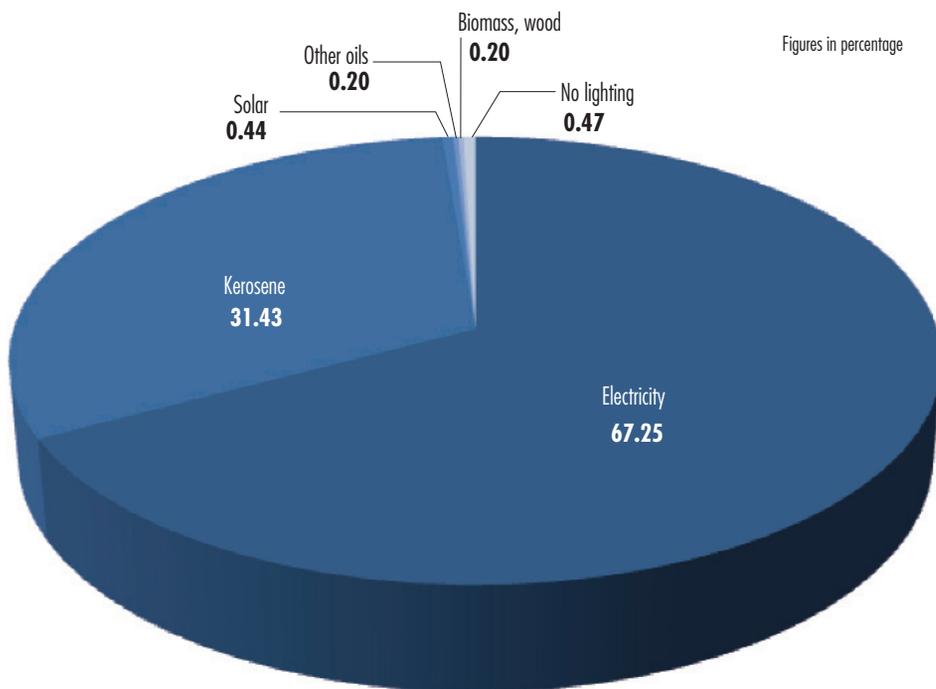


Energy poverty in India

Access to electricity

A significant number of Indian households continue to rely on kerosene for lighting. Although the electricity grid has reached a large part of the country, supply is still unreliable and of poor quality. Uttar Pradesh, Bihar and Assam consume more than 50 per cent of the total kerosene used for lighting in the country.

Sources of basic lighting in India

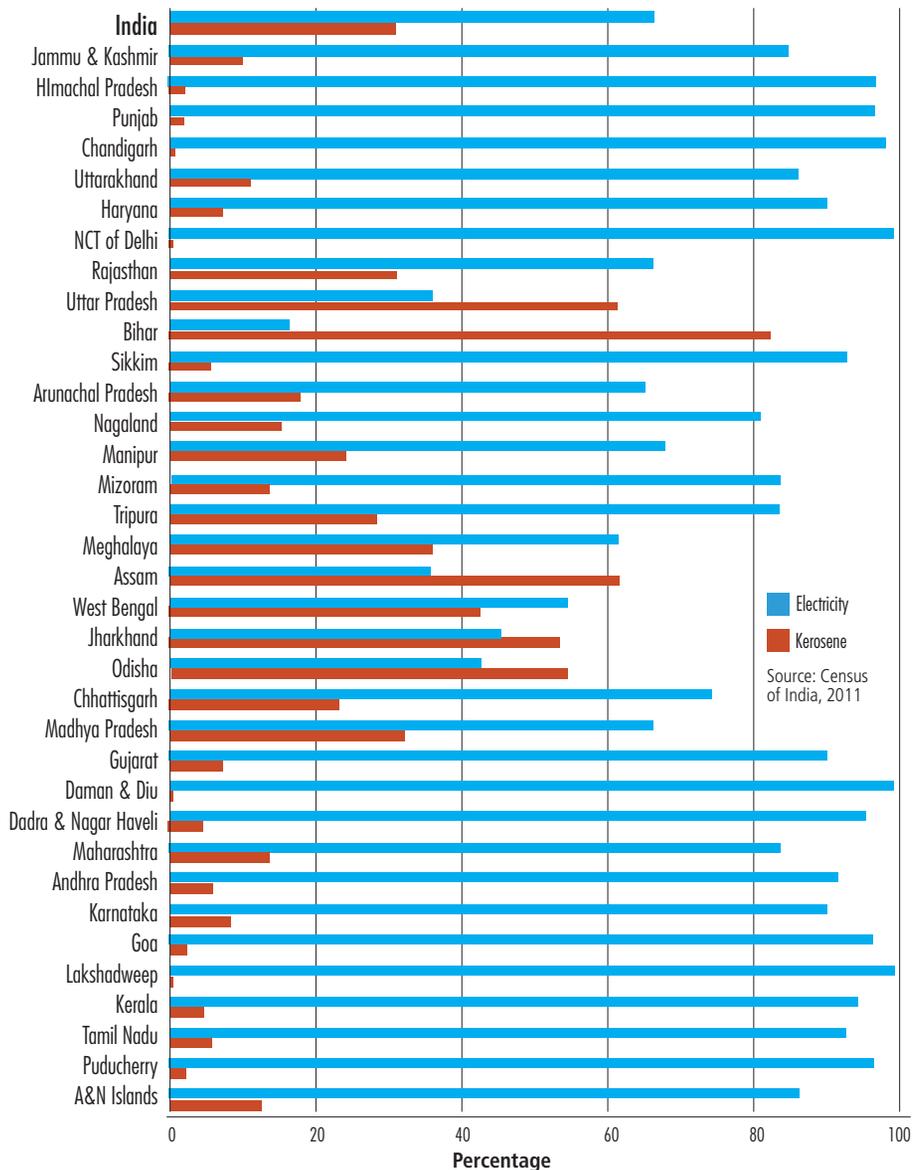


Source: Census of India, 2011

Energy poverty in India

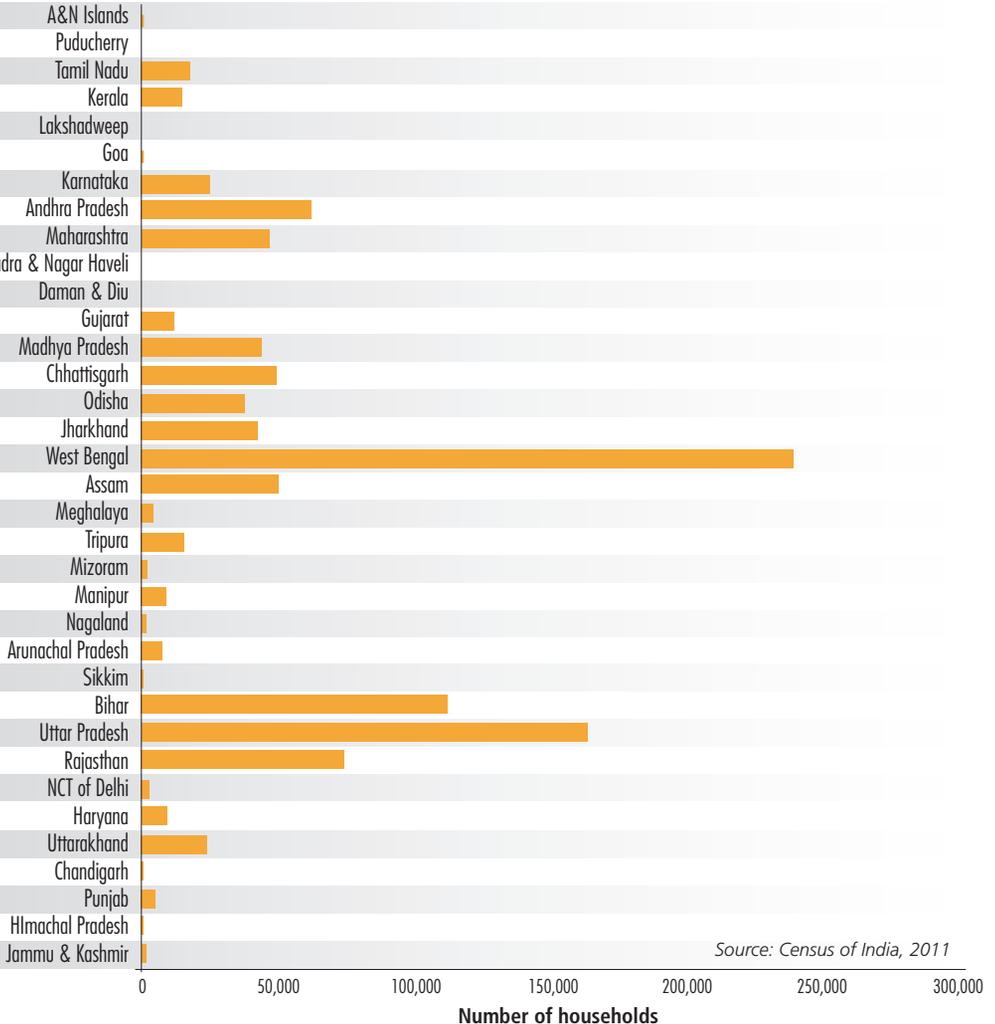
Share of households using electricity and kerosene for lighting

Lack of access to electricity is a chronic problem in Uttar Pradesh, Bihar, Assam, Odisha and Jharkhand. Half the households in these states are yet to be connected to the grid.



States using decentralised solar for their lighting needs

The states with least access to grid power, Uttar Pradesh and Bihar, along with West Bengal, are the largest users of decentralised solar applications for lighting. When the grid power has not reached a large number of households, there is a clear demand for decentralised renewable energy solutions.

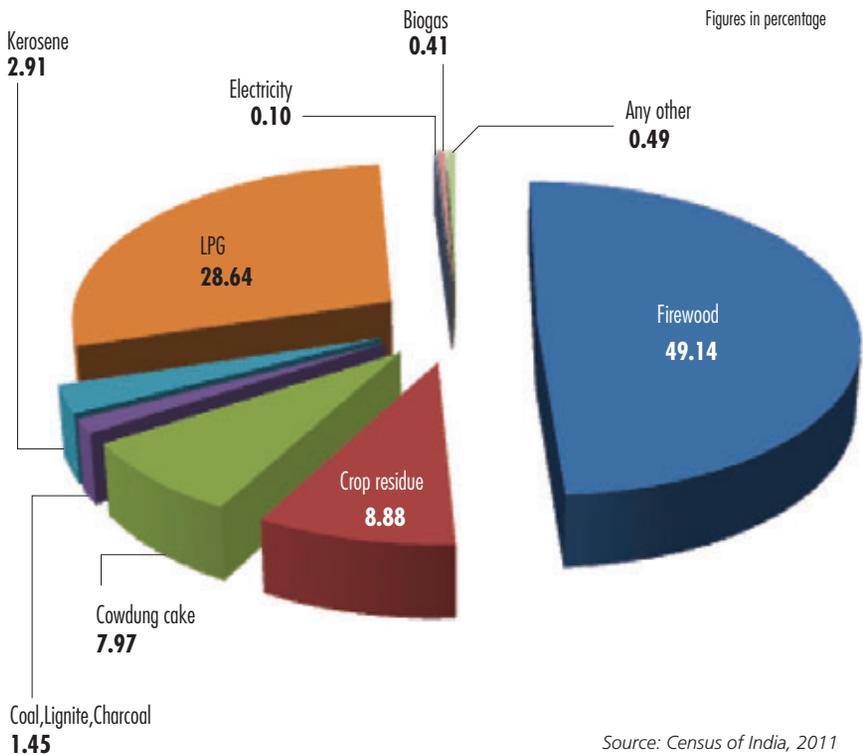


Energy poverty in India

The burning question

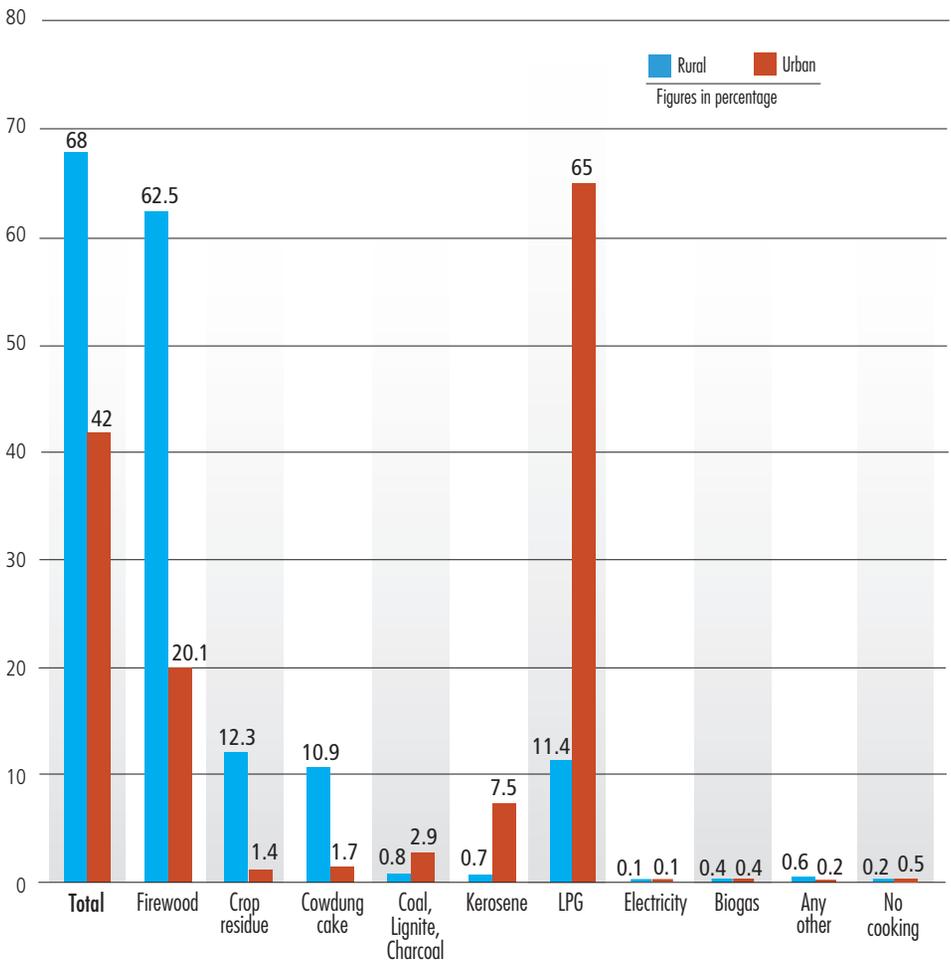
Sixty six years since independence, nearly 700 million people in India depend on firewood for cooking using traditional cookstoves. India has a long way to go before every household has access to clean cooking fuel.

Households in India using various sources of cooking fuel



Cooking fuel use in urban and rural households in India

Urban India burns fossil fuel subsidies, while rural India burns biomass. The use of firewood on traditional cookstoves is prevalent in Uttar Pradesh, Andhra Pradesh and Chhattisgarh.



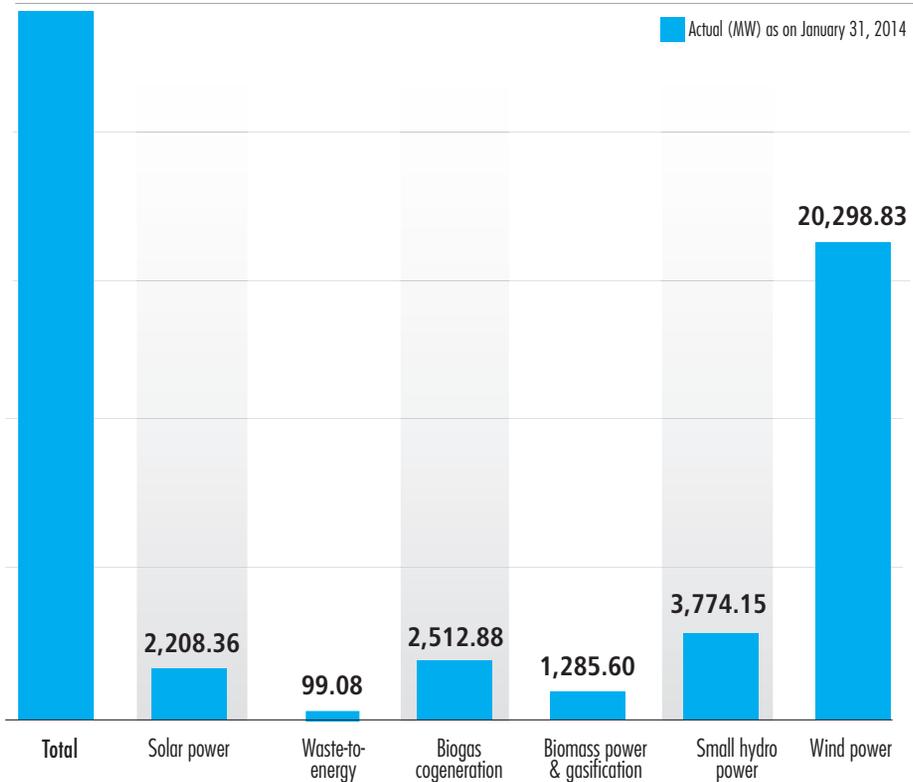
Source: Census of India, 2011

Current renewable energy achievements

Grid-interactive power

The focus of the Ministry of New and Renewable Energy policies has shifted from small off-grid systems to grid-connected renewable energy. This is visible from the fact that renewable energy has grown from almost 20,000 MW in March 2011 to 30,000 MW in January 2014 — a growth of 50 per cent in less than three years.

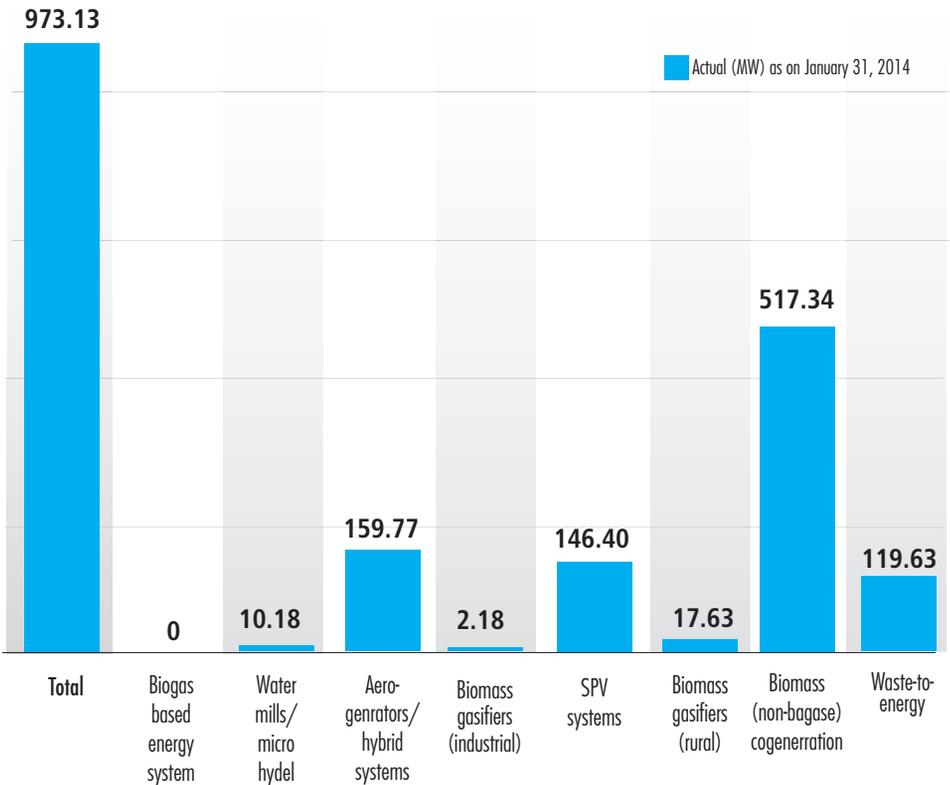
30,178.90



Source: Ministry of new and renewable energy

Off-grid/captive power

Off-grid achievements have been more or less contributed by industrial units for captive power generation. Bagasse-based cogeneration and industrial biomass gasifiers are the major contributors.

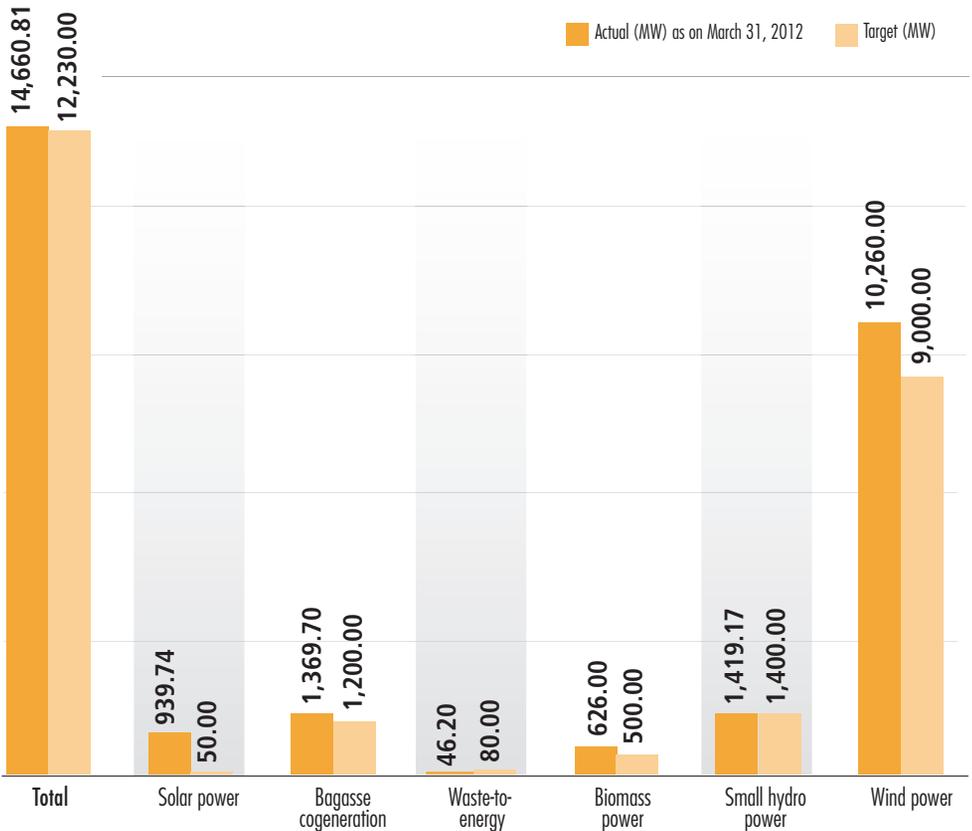


Source: Ministry of new and renewable energy

11th Five-Year Plan (2007-2012)

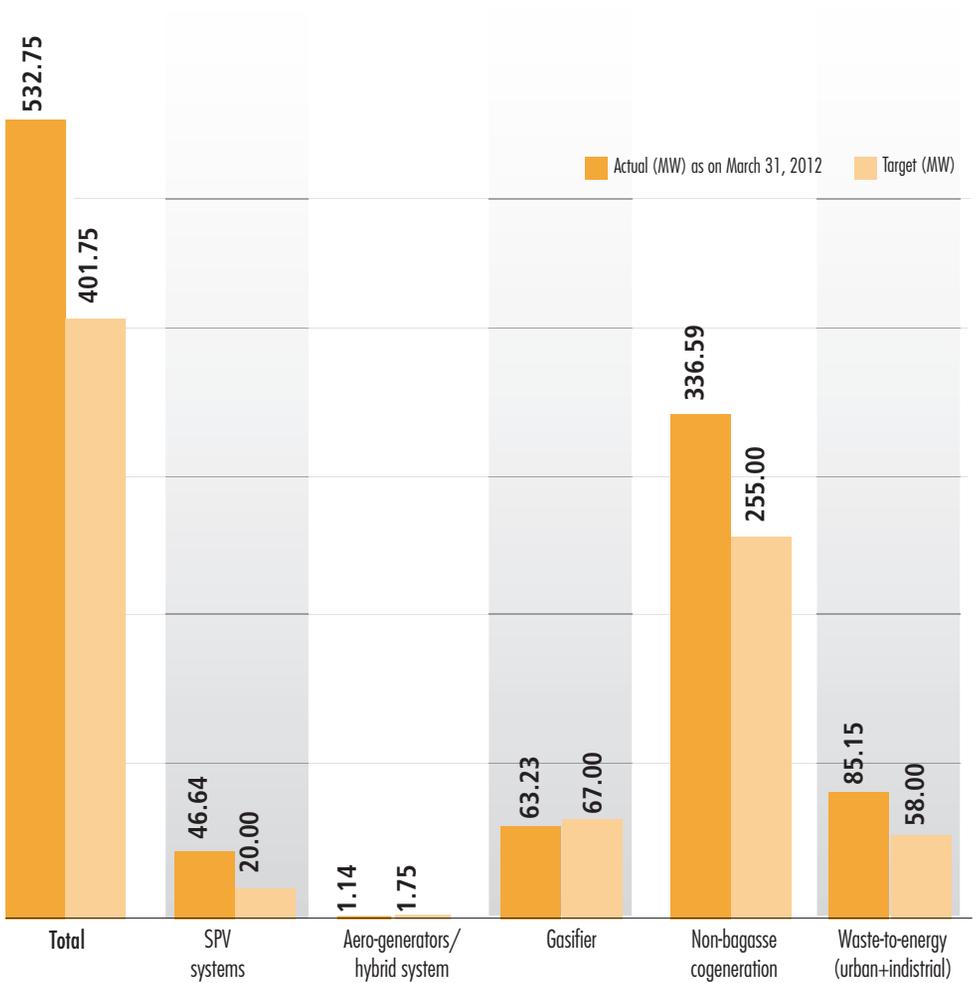
11th Five-Year Plan should be considered a success by any standards for renewable energy. The cost of generation of renewable energy came down significantly during this period.

Capacity addition through grid-interactive renewable power



Source: Ministry of new and renewable energy

Capacity addition through off-grid interactive renewable power



Source: Twelfth Five Year Plan (2012–2017), Economic Sectors - Volume II

12th Five-Year Plan (2012-2017)

In addition to continuing existing policies for development of renewable energy, several new measures have been identified to accelerate the pace of deployment in the country.

Targets for renewable energy for the 12th plan

Programme	Proposed Twelfth Plan Targets
Grid-interactive Renewable Power(MW)	
Grid Interactive Solar	10,000
Grid Connected Wind	15,000
Other Renewable Sources	5,000
Total	30,000
Off-grid/Distributed Renewable Power (MWe)	
Cogeneration from bagasse	2,000
Solar Off-Grid Applications	1,000
Waste to Energy	200
Bio Gas Based Decentralised Power	50
Others (Biomass Gasifiers, Micro-hydel)	150
Total	3,400
Renewables for Rural applications (Cooking)	
Biogas Plants (million)	0.7
National Biomass Cookstoves Programme (million)	3.5
Solar Cookers (Box type + Dish type)	3.5
Solar Cooking in schools for mid-day scheme (Schools in lakhs)	5.0
Renewable Energy for Urban, Industrial and Commercial Applications	
Solar Water Heating Systems (million sq.m of collector area)	6
Solar Air Heating System (sq m.)	-
CST based systems for community cooking (sq.m.)	50,000
CST based system for air-conditioning (125 systems, 30TR)	40,000
CST based systems for process heat (225 systems, 250 sq.m. area each)	53,750
Solar Cities	
New Solar Cities in addition to existing target of 60 cities and pending liabilities.	15
Model and Pilot Solar Cities.	-
Green Townships	25
Tourist/Religious/ Important Places	150
Alternate Fuel Vehicles (in numbers)	
	2,75,000
Power Generation from Hydrogen	
Stationary Power Generation (KW)	4,000
Hydrogen/H-CNG Stations (nos)	10
Demonstration projects for Hydrogen/H-CNG vehicles	500
Power Generation from Fuel Cell	
Stationary Power Generation (KW)	10
Back- up units for telecom towers (MW/nos)	10/2000
Fuel cell Vehicles	100

Source: Twelfth Five Year Plan (2012–2017), Economic Sectors - Volume II

1. A capacity addition of 30,000 MW of grid-connected renewable power is proposed.

- Institutional mechanisms to accelerate adoption of renewable power by states in the form of renewable purchase obligations are sought to be enforced by bringing in an amendment into the Electricity Act, 2003
- To ensure volumes, generation-based incentives will be continued
- It has been proposed to restrict upfront subsidy for small hydro plants of capacity 10 MW or less from the existing 25 MW

2. A capacity addition target of 3,400 MW for off-grid distributed renewable power is proposed

- The incentives for such projects would be sourced from a pool of funds originating from National Clean Energy Fund, CSR activities and tax-free donations

3. Renewable energy for cooking

- Continue biogas and solar cooker programme
- Solar cooking could be promoted under mid-day meal programme

4. Renewable energy for rural electricity access

- Models like solar home lighting systems through banking system, entrepreneur based biomass gasifier models for providing basic electricity and micro hydro systems will continue to be supported
- Special emphasis to be given to pumped water storage hydro plants to address intermittency in solar and wind technology

5. Off-grid solution for industrial, commercial and buildings applications

- Existing scheme on solar water heaters will continue with a review on capital subsidy
- Green building programme and solar city initiative will be expanded to new cities

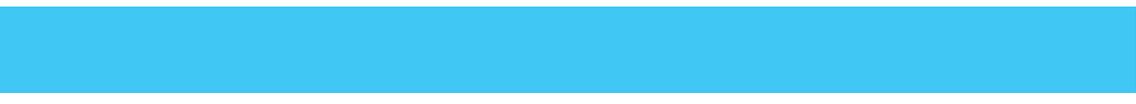
Major New Initiatives

1. National Institute of Solar Energy: Undertaking applied research, demonstration and development in solar energy including solar hybrid areas.
2. National Bioenergy Corporation of India: Set up to implement bioenergy mission including cook stove programme.
3. Renewable Energy Development Fund: Creation of a Renewable Energy Development fund has been proposed to fill the gap between the sector's financing needs and the amount that falls short of the banks' obligations to their lending to this priority sector.
4. National Bioenergy Mission: In view of the success of biomass-based off-grid renewable models in rural areas of Bihar, a Biomass Mission has been proposed to create a policy framework for attracting investment and to facilitate rapid development of commercial biomass energy market.
5. Renewable Power Evacuation Infrastructure: Special emphasis will be placed on creating evacuation infrastructure and transmission facilities for renewable power in a time-bound manner to support the large expansion in consumption and production of renewable power and optimal utilisation of transmission system.
6. National Biomass Cook Stove Programme: The initiative plans to universalise access of improved biomass cook stoves by providing assistance in exploring technology deployments, biomass processing and delivery models leveraging public-private partnerships.

Notes



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