
India : Investment Opportunities in Biomass Sector

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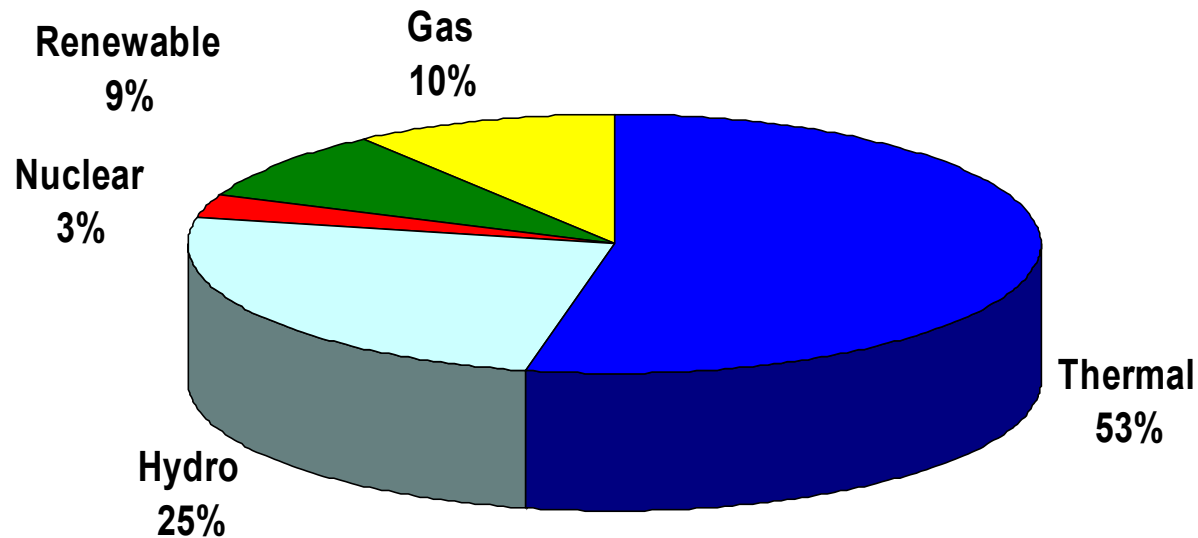
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Indian Power Sector at a Glance

Total Installed Capacity : 1,47,458 MW



Thermal 78,599 MW	Hydro 36,763 MW	Gas 14,734 MW	Renewable 13,242 MW	Nuclear 4120 MW
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Potential & Achievements of RE in India

Sector	Approx. Potential (MW)	Potential Harnessed (MW)	% Achieved
Wind	45195	9756	22%
Small Hydro (upto 25MW)	15000	2345	16%
Bagasse Cogeneration	5000	1034	21%
Biomass	16881	683	4%
Waste to Energy	2700	59	2%
Solar Power	4-7 kWh/Sq.M/Day)	2.12	
Biomass / Cogen (Non Bagasse), Gasifier, Energy recovery from waste etc	-	270	
Total	84776	13880	16 %

Policies for Renewable Power

- **The Electricity Act 2003, mandates to:**
 - Create competition, protect consumers' interest & power for all.
 - Facilitate private sector investments
 - Permit stand-alone systems – rural areas
 - Provide open access
 - Determination of preferential tariff
 - Specify minimum percentages for purchase of renewable power.
- **Twelve State Regulators have so far fixed such percentages varying from negligible to over 10%.**

Future Policy Direction

- **Introduction of Generation Based Incentives.**
 - **Introduction of Penal provisions for not meeting RPOs.**
 - **Introduction of Tradable Renewable Energy Certificates.**
 - **Renewable Energy Law**
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IREDA

INCEPTION

Incorporated under the Companies Act on 11th March, 1987 to promote, develop and extend financial assistance for Renewable Energy and Energy Efficiency/ Conservation Projects.

OBJECTIVE

Extend financial support to Renewable Energy, Energy Efficiency & Conservation projects

MOTTO

Energy For Ever



Mission



Be a pioneering, participant friendly and competitive institution for financing and promoting self-sustaining investment in energy generation from renewable sources, energy efficiency and environment technologies for sustainable development.

Operational Areas

Sectors being financed:

- Wind
- Small & Medium Hydro
- Biomass Power & Cogeneration
- Solar
- Waste to Energy
- EE & Conservation
- Bio Fuels/ Alternate Fuels



- Project Financing Schemes
- Equipment Financing Schemes
- Financing Through Intermediaries



Cumulative Performance

- No of Projects Sanctioned : 1892 Projects
- Total Loan Sanctions : € 1523 Million
- Loan Disbursements : € 845 Million
- Sanctioned Power Capacity : 3616 MW
- Commissioned Capacity : 1902 MW
- Conventional Fuel Replacement : 1.3 M MTCR/Yr



Resource Base

- Authorized Share Capital : € 147 Million
 - Paid-up Capital : € 76 Million
 - Net-worth : € 128 Million
 - Domestic Borrowings : € 114 Million
 - International Borrowings : € 136 Million
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Successes



- Developed RE through innovative financing.
 - Encouraged entry of private sector in RE.
 - Catalyzed market development leading to commercialization of RE
 - Helped in creating manufacturing, design & engineering, O&M capabilities.
 - Assisted in framing of conducive RE policies
 - Highest share in RE Financing.
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International Partners

- Govt of Netherlands, 1991 : 18 Million Dutch Guilders
- World Bank (1st LoC), 1993 :\$ 145 Million
- DANIDA, 1993 :\$ 15 Million
- Asian Development Bank, 1997 :\$ 100 Million
- KfW, Germany (1st LoC), 1999 :€ 61.35 Million
- World Bank (2nd LoC), 2001 :\$ 110 Million
- KfW, Germany(2nd LoC), 2008 :€ 50 Million

Lines of Credit in Pipeline

- KfW, Germany(3rd LoC) :€ 19.9 Million
 - AFD (France) :€ 100 Million
 - JICA (Japan) :\$ 100 Million
 - ADB :\$ 200 Million
 - NIB :\$ 50 Million
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Bio Energy: Potential Vs Achievement

Figures in MW

	Potential	Total Achievement	IREDA's Contribution
■ Biomass Power	16881	703	232
■ Bagasse Power	5000	1048	546
■ Biomass Cogeneration (Non Bagasse)	-	95	28.5
■ Biomass Gasifier	-	100	2.8



Sector Specific Information – Biomass/Cogeneration

- **Availability of Biomass estimated at about 540 million tons per year**
- **More than 16000 MW of grid quality power can be generated with presently available technologies.**
- **5000 MW of power can be produced if 550 sugar mills switch over to modern techniques of cogeneration.**
- **State Government Tariffs in the range of Rs. 2.63 to Rs. 4.00/unit**
- **Term Loans available from IREDA at 12.60% to 13.50%**

Concessions / Incentives Available

**Accelerated depreciation, Import Duty concessions, Excise Duty exemption,
Preferential Tariffs by some State Electricity Regulatory Commissions
Capital Subsidy from MNRE**

Barriers in Commercializing Biomass Projects

Policy & Regulatory

- Lack of uniform policies between states
- No Compensation for Grid fluctuations and outages.

Technical

- Inadequate commercialization due to lack of standardization of product/project deliverables.
- Non-availability of suitable Boilers for multi-fuel firing
- Inadequate documentation/information on the resource availability of biomass .
- Inadequate Technical, Managerial skills and Trained manpower
- Inadequate Technology, design, development of Biomass handling, storage, transportation and retrieval system

Financial

- Limited Domestic and International funds for Biomass Energy Projects
- Higher risk perception of lenders
- Weak Financial structure of Co-operative Sugar Mills to exploit Cogeneration Potential

Sustainable Biomass Supply Chain

- Unorganized markets for supply of biomass fuel and volatility of prices
 - Seasonal availability of Biomass Fuels
 - Alternate applications of Biomass leads to competition and price escalation
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Investment Opportunities

- Strong and clear policy framework providing enabling environment.
 - Structures in place to facilitate power trading, open access etc.
 - Power sector growth (5%) yet to catch up with GDP growth rate (8%) – creating market demand.
 - Large supply-demand gap in power sector.
 - Very large potential of RE yet to be tapped.
 - Mature financial markets
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IREDA welcomes you to join hands to create a better tomorrow.



Thank you !

Indian Renewable Energy Development Agency Limited

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