OVERVIEW OF RENEWABLE ENERGY PROGRAMME IN INDIA

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Energy is one of the most important basic human needs and key input for all round economic growth of the country. With our focus on planned energy sector growth, the installed capacity of power generation in India has crossed 1,60,000 MW and is likely to cross 2,00,000 MW by the end of the present five year plan (11\textsuperscript{th}) in 2012.
Structure of Global Energy Consumption
World wide potential of different Renewable Energy Sources
Electricity Scenario in India ::

Source: Central Electricity Authority
### Future energy demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Populati in Millions</th>
<th>Billion Kwh</th>
<th>Projected Demand(GW) @ GDP Growth Rate</th>
<th>Peak</th>
<th>Installed capacity Required (GW) @ GDP Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Energy Requirement @GDP Growth Rate</td>
<td>Energy Required at Bus Bar @ GDP Growth Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>1197</td>
<td>1097</td>
<td>1167</td>
<td>1026</td>
<td>1091</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8%</td>
<td>9%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>2016-17</td>
<td>1275</td>
<td>1524</td>
<td>1687</td>
<td>1425</td>
<td>1577</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8%</td>
<td>9%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>2021-22</td>
<td>1347</td>
<td>2118</td>
<td>2438</td>
<td>1980</td>
<td>2280</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8%</td>
<td>9%</td>
<td>8%</td>
<td>9%</td>
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<tr>
<td>2026-27</td>
<td>1411</td>
<td>2866</td>
<td>3423</td>
<td>2680</td>
<td>3201</td>
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<td></td>
<td></td>
<td>8%</td>
<td>9%</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>2031-32</td>
<td>1468</td>
<td>3880</td>
<td>4806</td>
<td>3628</td>
<td>4493</td>
</tr>
<tr>
<td></td>
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<td>8%</td>
<td>9%</td>
<td>8%</td>
<td>9%</td>
</tr>
</tbody>
</table>
It is clear India will need an installed capacity of 960 GW of power in the year 2031-32 if the Country maintain 9% of GDP this will however, go down in case of lower GDP growth rate.

The question is how India is going to cater such high demand.
Most of the power plants in India are Coal Based
<table>
<thead>
<tr>
<th>Barriers ::</th>
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<tbody>
<tr>
<td>Coal ::</td>
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</table>

As on April 2005, the ratio of proved coal resources and annual coal production in our country indicating balance life of resources shows 144 years for coal as against 22 years for oil and 52 years in case of gas. This fits fairly with the world scenario in which also the balance life for coal is about 164 years as against 40 years for oil and 67 years in case of gas. However, the quality of Indian coal is very poor and demand and supply does not tally resulting import of coal by Indian power industry significantly. This has a tremendous impact on price of electricity from coal.

Moreover, coal based electricity generation is a major source of pollution. There is public pressure against coal based power generation. In this backdrop it would be difficult to harness the entire coal reserve of India.
India is also endowed with abundant Hydro Power Plant potential of about 149 GW (Giga Watt)
Barriers ::

Hydro Power ::

The construction of Hydro Electric Projects is a challenging task that not only involves meticulous planning and huge investment, but also faces numerous unforeseen hurdles that can stall work at any point of time. Law and orders, protest from Environmentalists, Poor infrastructure in Himalayan and Sub Himalayan Region, Inter State Dispute, International Dispute over sharing of water are the major challenges which restricts Hydro Power Development in India.
India do have a Mega Plan to harness Nuclear Power. However, there are many techno political issues in this Sector which need to be addressed.
Renewable Energies are sustainable and profitable and they provide independence from imported raw materials. Renewable Energies are safe and reliable. The technology exists, the process are tried and tested and there are countless success stories. Dependable, renewable energies have become reality. Renewable energies are win-win all round companies, countries as well as for the environment.
Renewable Energy Potential in India ::

The Renewable Energy Potential of India is very high. India is a tropical country and blessed with plenty of sunshine almost all over its surface and throughout the year. More over, India is an Agricultural Country and produces huge quantum of Agricultural waste.

India has a long coastal line with a wind power potential of 45,000 MW. The solar power potential of India is more than 9,00,000 MW. The top five countries in terms of renewable power capacity in 2009 were China, US, Germany, Spain and India. Together these countries accommodate for around two thirds of the global renewable power capacity.
National Solar Mission aims for Global Leadership ::

The Jawaharlal Nehru National Solar Mission (JNNSM) has set very aggressive targets for Solar Power capacity addition in the country. It aims at achieving 20,000 MW by the year 2022. The programme will be implemented in three phases involving the achievement of 1100 MW of grid connected capacity in the first phase (till 2013), 4000 MW in the second phase (2013-2017) and the remaining in the third phase (2017-2022).
1st MW level grid connected solar PV power Plant, Asansol, West Bengal
The small roof-top grid connected solar power plants are also becoming popular day by day.
50 Watt LED based Street Lighting System
New Business Opportunity in Urban Areas
The guidelines for JNNSM has already been announced. All the State Regulatory Commission has declared Solar Power Tariff. It is expected the programme will pick up from 2011-2012. JNNSM has opened up investment opportunity both in manufacturing sector and power generation sector.
Wind Power Programme in India ::

The wind power potential of India is 45,000 MW excluding offshore. India is one of the leading countries in the World in regard to harnessing of wind power. India has an installed wind power capacity of more than 14,000 MW. Large size wind machines of capacity 3 MW are now available in the country. Indian west coast has much higher wind power potential than east coast.

Most of the Regulators have declared wind power Tariff. GBI is also available for wind power generation.
Potential of Biomass Power in India ::

By Convention the term “Biomass” is used in India mainly for crop residue, waste by products of crop processing, woody produce of forests, biomass acquired from growths in waste lands, and the woody produce of forests, potential of biomass based energy in India is to the tune of 20,000 MW with a plant load factor of 75-80%. India is World’s Second biggest producer of sugarcane. About 7,000 MW of power could be generated in India from dry Bagasse.
Already generated 10 Million Units of Green Energy. More than 200 people are working in the Project.
Half a billion people of India do not have access to electricity.
Renewable Energy particularly off grid solar photovoltaic can play a major role in this regards.

About 5 million people in Indian villages now use solar power.
THANK YOU