

Renewable Energy Sources

- o Biodiesel
- o Biomass energy
- o Ethanol
- o Solar energy
- o Wind energy



Renewable Energy Sources

Rising prices and declining reserves of conventional fuel along with stringent emission norms are likely to drive the growing dependence on renewable energy sources.

Renewable energy sources offer an enduring and environment-friendly solution to the existing and impending issues with conventional fuels. These energy sources have the potential to meet the needs for both transportation fuel and electricity. The use of biofuels - ethanol and biodiesel - at 5 per cent blending could lead to potential annual savings of Rs. 12.1 billion and Rs. 10.3 billion, respectively. Wind energy will remain the largest renewable source of power and could exceed the Eleventh Plan target addition of 10,500 MW. The generation-based incentive scheme for solar energy could stimulate greater involvement of large private players.

Given the huge opportunities, the questions that arise are:

- ⇒ What are the issues affecting mandatory blending of ethanol in gasoline (petrol)?
- ⇒ What are the expected returns from the various routes (direct and indirect) of ethanol production?
- ⇒ When is the biodiesel blending programme likely to take off? What is the current status on the jatropha cultivation for production of biodiesel?
- ⇒ Are the returns from wind energy in sync with those from other energy sources?
- ⇒ What is the potential for bagasse-based power co-generation? What is the investment potential in bagasse-based projects?

CRISIL Research has attempted to answer the above questions, and many others on renewable energy through this report. The report provides a comprehensive view of demand potential, supply scenario, regulations, pricing, technology, industry structure and global scenario.

Key conclusions:

Ethanol	Biodiesel	Wind energy	Solar energy	Biomass energy
<ul style="list-style-type: none"> • Potential savings of Rs. 12.1 billion. at 5 per cent blending in 2009-10, subject to adequate supplies • Direct ethanol production route likely to solve supply issue • Regional imbalance and taxes to constrain supply • High crude oil prices to make blending profitable 	<ul style="list-style-type: none"> • Blending of 5 per cent likely to save Rs. 10.7 billion in 2011-12, subject to availability • Inadequate plantation to impact ability to provide sustained supply • Import of edible oil for biodiesel uneconomical • High crude oil prices make blending attractive 	<ul style="list-style-type: none"> • Wind energy to remain as the highest contributor and could exceed plan target addition of 10,500 MW • Competitive returns to attract higher private sector participation • Most competitive delivery model • Fiscal incentives have aided capacity growth 	<ul style="list-style-type: none"> • Insignificant share in renewable energy • High capital cost and low efficiency constraining solar energy use • New generation-based incentive scheme could lead to large private sector participation • High capital cost and low PLF leading to higher unit cost 	<ul style="list-style-type: none"> • Bagasse based co-generation plants to exceed targets • Agri residues-based energy has high potential but slow progress • Waste to energy targets to be met due to urban renewal mission initiatives • Lower addition of biomass gasification projects due to lack of economies of scale

Key highlights of the report:

- Industry outlook of biodiesel till 2011-12 and ethanol till 2009-10
- Outlook on wind, solar and biomass energy till 2011-12
- Potential market in terms of requirement and availability of bio-fuels
- Regulations and standards that impact renewable energy potential
- Operational and technical issues
- Pricing-related issues
- Information related to each energy source in terms of technology, types, processes etc.

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