

Alternative technology needed for India's fuel security



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India's present consumption of the natural oil is about 150 MTY (million metric tonnes per year). About 72 per cent of it, 121 MTY, is imported. To stop or even to reduce the dependence on the import, the 121 MTY will need to be generated from India's present known reserve which is just 790 MT. For that, India has to increase the E&P (Exploration and Production) capability and/or develop a new technology for the oil substitute.

What do we do? Act right away to reduce

the import.

Reducing oil import

- 1) Major consumption of oil is in the transport sector. At present, high density battery technology has been developed which can be used in battery operated electric car. Electric car will not only reduce our dependence on oil, but it will also help reduce the emissions.
- 2) Oil fired power plants are not expected to come up in future. Although that is a good step, the use of oil in captive power plants continues. The captive power plants are for meeting the power shortage and until an alternative fuel on a sustainable and viable basis is available, will continue to consume oil.
- 3) CNG (compressed natural gas) in the transport sector will play a major role to reduce the oil consumption.
- 4) Blending of petrol with ethanol is another way.
- 5) Sugar mills to be encouraged to produce ethanol and supply it to oil companies. The technology to use Bagasse and similar fibrous material to produce ethanol is being developed.
- 6) Blending of petrol with ethanol up to five per cent is feasible on a long term basis.
- 7) Use LNG (liquefied natural gas). Many LNG terminals are proposed in addition to the two

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existing terminals. Gas exporting countries are also adding liquefaction facilities to meet the growing worldwide gas demand.

8) Natural Gas (domestic and imported) is expected to be made available to fertilizers, petrochemicals, transport and domestic sectors at regulated prices.

9) Any excess natural gas available may be diverted to the existing CCPP facing gas supply shortage.

10) Installation of gas-based power plants on large scale does not seem to happen in near future. But, it is a viable alternative for oil conservation.

11) Wind power potential is 45,000 MW, but the present total installed capacity is only 6100 MW. Development of wind farms is expected to grow steadily more to avail various incentives given by the government. The average load factor of wind mills may reach increase from the present 17 per cent to 20 per cent with development in technology. This translates to a maximum capacity addition of 9000 MW, when the total wind potential is harnessed.

12) India is the largest producer of sugar in the world, hence it has a potential to generate about 3500 MW of power from Bagasse, based on the cogeneration plant use. The present installed capacity is 500 MW, low for various reasons such as high investment and working capital for co-operative sugar mills, low power tariff and off season operations limitations.

13) Solar energy offers huge potential to meet country's energy requirement. The potential for solar energy is 20 MW / sq. km of area, which translates to 200,000 MW from one million hectare of land use. At present the solar energy is limited to the heating system and small scale application of photovoltaic cell. Solar application has potential to be a future source of power generation in medium and long terms, considering the intense solar radiation and a large area of the country. However it is still to become economically viable.

14) About 113 BT of unmineable coal reserves provide potential opportunity for development of in-situ coal gasification technology. Efforts are on in this direction.

15) Coal Bed Methane projects have significant potential of gas extraction from the coal mines prior to the mining.

16) A large quantity of methane hydrate is predicted to be available at Indian coast. The estimated potential is as high as 1900 times of the country's natural gas reserves. Technology

for safe extraction of methane from gas hydrate in long run cannot be ruled out.

Hydropower

Surpassing all the above is the tremendous potential of the hydroelectric plants. The hydroelectric plants (HEP) have a long history. The first HEP in India came up towards the end of the 19th century, at Sidrapong, near Darjeeling. Its capacity was 130kW. Since then, India has progressed by leaps and bounds. The first major HEP was Tata's Khopoli HEP, in about 1914. The capacity was 60 MW. Today the total HEP capacity in India is over 36000 MW.

India has 14 major rivers, 55 minor rivers and hundreds of small rivers. These waters hold tremendous potential for generating power up to 84000 MW. The beauty of hydropower is that it will be green power.

Alternative technology

Biodiesel can be used for blending the conventional diesel oil. As per the present efforts, jatropha (a seed) plantation will yield biodiesel and one per cent blending of diesel with biodiesel on a sustainable basis is anticipated in near future. However, an integrated BPcPP (Biodiesel Production cum- Power Plant) holds even greater potential.

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