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The bio-fuel option

Bio-fuels hold potential as an energy alternative

Bio-fuels have recently been attracting the global spotlight for their potential as an energy alternative. Though increasing environmental concerns have led to a simultaneous cost-benefit analysis, the scales are still tilting in favour of bio-fuels.

Goldman Sachs, who predicted a shift in the emerging-market cosmos in the direction of the BRIC countries (Brazil, Russia, India and China), has announced a series of environmental goals and connected viable investment opportunities in alternative energy with their goal of wealth creation.

Similarly, Houston-based Emerging Markets Online, an energy intelligence and management consulting firm, has identified trends in worldwide bio-diesel production and feels that China and India are slated to become large-scale producers and users of bio-diesel over the next decade.

As per Goldman Sachs' data, the estimated cost of a barrel of fuel made from sugar cane is \$45 and that of jatropha is \$43. Jatropha has the capability to grow on land which cannot support crops and is known to survive drought too. It generates, from the fourth year of cultivation onwards, a net income of about Rs10,000 per acre for 35-40 years and also improves the fertility of the soil and provides fuel wood after its life span of 50 years.

Ethanol is the most widely used bio-fuel in the world. Thanks to technological advances, the cost of producing and processing it, has come down. Brazil has replaced petrol-only engines with engines that use pure ethanol or a 78:22 petrol-ethanol blend. The shift has benefited Brazil environmentally and economically. Ethanol, one of the best tools to fight vehicular pollution, contains 35 per cent oxygen that helps complete combustion of fuel, thus reducing tailpipe emissions.

There is an argument that energy crop plants battle with food crops and cause food shortages and price increases. The argument needs to be analysed against the background of India's real food situation of supply and demand and the advantages and disadvantages of producing bio-fuels. Adoption of agricultural practices should evolve efficient methods of utilising available land and other resources to meet both food and fuel from agro forestry systems.

In Brazil, bio-ethanol production has not

adversely affected food production since Brazil is one of the world's largest exporters of agricultural commodities. In 1980s, of the 55 million hectares of land area devoted to primary food crops in Brazil, only 7.5 per cent was used for sugarcane, which represented only 0.6 per cent of the total area registered for economic use. Of this, only 1.7 million hectares was used for ethanol production.

From India's perspective, ethanol and jatropha are the two potential feed stocks. According to R.P.S. Katwal, director general, Indian Council of Forestry Research and Education, the government has plans to plant jatropha trees on 50,000 hectares, at a cost of Rs14.3 lakh. Other projects being funded from abroad include a proposed \$2.5-million pilot project in Hyderabad and Rajasthan, which will produce 10 tonnes of bio-diesel per day. Raw oil from pongamia, jatropha and other trees will be sourced from local farmers, who will be the major beneficiaries in this project.

Indian companies are looking at land acquisitions abroad too. Shapoorji Pallonji & Co is looking to purchase land in South America and Africa for its bio-fuel projects. Nandan Biomatrix and Labland Biotech are buying land in Malaysia to grow jatropha. Labland is also teaming up with a Portuguese company for jatropha cultivation in Mozambique.

The Government of India has been taking steps to promote the alternative fuels cause. The BIS specifies use of 5 per cent ethanol-gasoline blend without any engine modifications. In Maharashtra and Uttar Pradesh, three 5 per cent ethanol-gasoline pilot projects were launched to ascertain economic and operational aspects of blending ethanol in gasoline. Nine states and four Union territories in India blend minimum 5 per cent ethanol in petrol.

As global reserves of fossil fuels shrink, the bio-fuel industries have to put their act together, and India is in a good position to step up to this opportunity. India pursues an energy growth of 8-10 per cent. It imports almost 70 per cent of its annual crude petroleum requirement, around 110 million tonnes, with the expenditure on crude purchase being Rs160,000 crore per year. As a result, the government now looks committed to the use of ethanol as fuel. This is expected to benefit sugarcane farmers as well as the oil industry in the long run.