

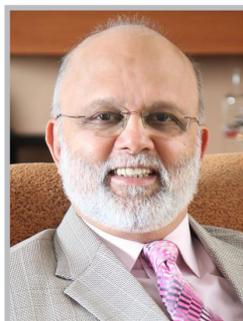
# Biomass Should be Treated as National Wealth

While crude prices are showing a downward trend and the energy bill may appear to be reined in, India's growing energy demand continually puts it through a rollercoaster. This demand has also created another issue – emissions, leading to climate change. The development of the bio-energy sector is a key imperative for India as it battles the twin challenges of achieving energy security while staving off climate change. Comprehensive inclusion of bio-energy in the energy basket will also allow India to meet its ambitious 2020 renewable energy target. Of the 250 million tonnes coal equivalent renewable energy consumption worldwide, India has a mere 4 per cent share. A percentage increase in this share would have a significant impact on India's GDP.

Bio-energy, or biomass-based energy, is the only renewable source that can be used across all three energy-consuming applications – transport, heat and electricity. Also, it allows for distributed generation and utilisation, making it widely accessible. Among the various options available, biofuels (biodiesel, bioethanol), biomass combustion for heat and power, and biomass gasification for heat, power, fuel and chemicals, have the maximum potential for India with low cost of investments.

However, some issues must be addressed first. In order to reap the maximum benefit from bio-energy, an integrated policy approach has to be taken up across the value chain – from feedstock aggregation to technology development, deployment, distribution of the energy, and measurement of the impact.

The development of the bio-energy sector is contingent upon the availability of feedstock. Estimates peg the availability of biomass in the country in excess of 500 - 600 million metric tonnes per year, but the



**Pramod Chaudhari**

*Chairman, CII National Committee on Bio-Energy and Executive Chairman, Praj Industries Limited*

availability of feedstock at the right price is the key issue. Agricultural residues today are either burnt in the field or used as fuel, and do not fetch significant value for the farmers. There is also no organised sector to collect these residues. It is expected that on commercial deployment of biomass technologies such as second generation ethanol, gasification, pyrolysis, etc., collection and delivery of agricultural residues could become a valuable source of supplementary income to farmers, possibly to the extent of up to Rs 3000/dry ton of agricultural residue, if suitable mechanisms are put in place. Therefore, an integrated approach to biomass collection and delivery should be undertaken countrywide. Biomass should be treated as national wealth, at par with minerals and other natural resources.

In many cases, the technology is still evolving, as in the case of second generation biofuels, or waste-to-power. These need robust funding and policy intervention.

In many developing countries, there are special grants and incentives available for such efforts to ensure energy security from alternate sources. Another challenge is the uniform and consistent implementation of the policy. Take the case of the Ethanol Blending Programme which has seen many implementation challenges, right from

inconsistent mandates (there was a lapse of 10 years since it was first mandated) to its pricing and excise regulations.

One key advantage of bio-energy is the multiplier effect for rural India via employment generation. Feedstock, available in the rural belt, provides incentive for employment in the form of collection (it can be turned into an organised employment source); establishment of energy generation industries (such as ethanol or biogas, which can be transported thereafter); and development of distribution channels. It is also a great way to introduce specialised skills into rural India.

The CII National Committee on Bio-Energy has embarked on a strategic agenda to mainstream bio-energy and integrate it with the national energy infrastructure, with special emphasis on policy advocacy, technology intervention, and establishing market linkages. As a step in this direction, five Core Groups were constituted, focusing on Feedstock, Biofuels, Power and Decentralised Distributed Generation (DDG), Biogas, and Cook Stoves, to suggest policy interventions and an action plan for the development and promotion of bio-energy in India. A Bio-Energy Report has also been tabled.

We recognise that progress has been achieved in some areas. However, a lot still needs to be done in order to make India energy-secure. Some key areas are mentioned here.

Biogas is a critical renewable energy source. The Government of India's Ministry of New and Renewable Energy (MNRE) has implemented demonstration programmes in the past few five-year plans. To expand the scope of the existing biogas power generation programme to include cooking, heating and cooling applications, it has been



renamed the 'Biogas-based Decentralised Power / Energy Generation Programme' (BPEGP). Further, the demonstration programme on biogas purification and bottling is proposed to be converted into a dissemination programme and renamed as 'Biogas generation, Purification and Bottling Program' (BPBP) during the 12<sup>th</sup> Plan. Recognising the importance of biogas, the Central Electricity Regulatory Commission (CERC) has given a separate status to biogas for the first time.

Cook Stoves are an effective method for rural India that can ensure smokeless cooking, which will reduce the health hazard to women and children, and also combat the rapid depletion of forest cover. While the NPIC model of the MNRE enables faster propagation of improved cook stoves, there is a need for quality control. Financial assistance from the Government and the corporate sector will enhance propagation. On the design front, indigenous front-feed forced draft stoves with lighting by thermopiles should be developed. High efficiency fixed stoves with metallic liners should also be developed, and the BIS standard for fixed stoves should be prepared.

Extensive propagation of cook stoves under corporate CSR programmes should be promoted, with users contributing a small part of the cost of the stove.

Transport fuels account for 22 per cent of the energy use and 14 per cent of emissions in India. The current production of transport biofuels largely entails ethanol production from non-food, byproducts of the sugar industry called molasses. In the case of biodiesel, Jatropha was promoted as a major feedstock of interest, but large-scale cultivation of Jatropha was unsuccessful due to lack of experience, infrastructure and supply-chain for cultivation and collection of the seeds.

Some areas that need to be addressed to ensure effective implementation of bio-energy in transport fuels is clarity on not just the blending level mandated, but also on the detailed implementation procedure to ensure that there is an effective mandate. For successful realisation of the mandate, it is important to create an operating environment that supports sustained indigenous manufacturing and domestic consumption of fuel ethanol. It would also involve rationalising the availability for

competing uses and bringing automobile users on board to improve acceptance. While second-generation ethanol technology to convert agri-residue or biomass such as bagasse, corn cobs, corn stover, etc. to ethanol is ready to be commercialised and the cost of production is approaching parity with molasses-based fuel ethanol, there is also a need to enhance the effectiveness of the first generation ethanol programme.

While a few recommendations have been mentioned here, there are many others that can be readily implemented provided we have continuous dialogue and learning to create awareness and acceptance. It is important to have demonstration projects for each idea to enable rapid scaling-up. Financing schemes and fiscal incentives will create a positive environment for the development and adoption of these technologies.

India enjoys unique opportunities in the bio-energy sector due to its agrarian economy and industrial growth. There is huge potential for the sector to contribute to GDP growth while mitigating greenhouse gas emissions, making it a long-term, sustainable energy option for the nation. ■