Speech delivered at the Bio Energy side event organised by FAO

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November 17, 2006

Let me begin by thanking the FAO for inviting India to this side event. My brief speech shall underscore our position on the subject.

1. Bio Energy is critical to India's energy mix and a full 31% of India's primary energy comes from non-commercial sources of energy that include agricultural and forest waste, wood chips, animal waste and bio fuels made from non-edible oils. The share of such non-commercial energy is second only to coal which accounts for about a third of India's primary energy mix. Some 75% of Indian households use biomass as the primary fuel for cooking. And over 80% of the household energy demand in India comes from cooking. Thus bio-energy meets some 60% of the domestic energy needs of India. More importantly, the Integrated Energy Policy that I recently wrote confirms that agricultural, forest, wood and animal waste will constitute at least 10-12% of India's primary energy mix even in 2031 – 32 and remain the third most important energy resource even 25 years from today after coal and oil.

2. Improving efficiency of bio-energy use in households has been identified as a key priority in the Integrated Energy Policy. Current conversion efficiencies of bio mass can easily be doubled thereby making its use much more sustainable in the long run.

3. Ethanol is not included in the numbers I just gave. Ethanol is currently produced in India almost entirely as a by-product of the sugarcane industry and has up till recently been a feedstock for the liquor, chemical and pharmaceutical industries in that order. A limited voluntary program of ethanol-blended petrol has been taken up but success has been limited as local alcohol availability is limited and subject to sugarcane production. This has led to India becoming a significant importer of alcohol depending on domestic availability. The country is also pursuing a program for promoting bio-diesel and alternate crops such as sweet sorghum for production of ethanol. R&D work on cellulosic ethanol is also in progress.

4. Bio energy in different forms is the second most important renewable energy option for India, the first being solar which still has to prove its commercial viability but is six times more effective a source even at 15% conversion efficiency – thereby reducing requirement of land to a sixth. Assuming India could find 60 million hectares of land for energy plantations bio-energy could yield one fourth to one third of India's primary energy requirements even 25 years from today. Thus bio-energy has a huge energy security dimension for India. However this assumes that such a land mass is available and the assumed yields are realized.

5. The foregoing underscored the positives and very often unsubstantiated claims are made in respect of availability of waste land and marginal lands, availability of plant varieties and germ plasms that need no water for growth, high yields etc. Even the above estimate of the role bio energy can play in India's energy mix assumes a wood yield of 20 tons/annum /hectare. Much more research is needed in this area as also on the impact of such energy plantations on the eco system, the livelihood of indigenous people and their lifestyles. Most importantly, concerns of food security and water security need to studied before embarking on any major bio-energy program. India is home to 17% of the world population. Three-fourth of Indians depend on agriculture for their livelihood. And over half of India's farmers are rain-fed. Thus food security and water security concerns are paramount. In another 10 years or so water will become India's number one problem. Proponents of bio-energy often exaggerate their claims of availability of waste and marginal land, low water needs and the benign nature of bio-energy. These claims are, however, often not based on rigorous research.

6. Production and consumption of bio-energy in a localized and decentralized manner – consistent with current patterns are indeed sustainable. However, it is far from clear what adaptive measures are needed for large-scale commercialisation of these non-commercial fuels to make energy plantations sustainable. Regulatory institutions and or practices are simply non-existent to regulate commercialisation of bio-energy and its potential impact on eco-systems, socio- economic settings, livelihoods, migration, land-holdings, food security, water security etc. Like agricultural subsidies of the past, subsidies given to bio-energy are likely to create distortions and impact millions of rural uneducated and dis-empowered without adequate checks and balances. Similarly the impact of taxation is a huge distortion as is the case in India.

7. A lot of the above negatives are not relevant to cellulosic ethanol and India is pursuing this route as well as developing alternate plants such as sweet sorghum for production of ethanol as it requires much less water than sugarcane.

8. In summary, bio energy in its various forms is important to India's energy security. Currently it has the second largest share in India's primary energy mix and even by 2031-32 it would remain the third largest source of primary energy for India. However, significant work needs to be done to analyse the impact of commercialising it on a large scale and adaptive measures as well as regulations have to be put in place to ensure it remains truly green.

I thank you all for your patience and I shall be happy to take any questions that you might have. Thank you.