

India's Energy Strategy, Development and Security

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Abstract: - Today, energy has become the power of economic growth and dynamic sources for development in modern era. India occupied first place in human energy sources after china. Availability of energy with required quantity of supply is not only key to sustainable development, but also the commercial energy has a direct impact and influence on the quality of service in the fields of education, health and agriculture, which are vital and essential requirements of any society. There is a big gap between the developed and under developing countries in per capita availability of energy. India's per capita consumption of energy has been quite low, despite of the fact that India is the sixth largest electricity market in terms of power generation. Per capita electricity consumption in India is only 615 Kwhr per year as compared to world average of 2516 Kwhr in past. To deliver a sustained growth rate of 8% to 9% through next 25 years till 2031-32 and to meet the life line energy needs for all citizens Government of India has come out with aims to bridge the prevailing gap in the demand and supply of energy in short, medium and long term perspective for that both private and public sector participation in meeting the energy needs of the country, the policy strikes a right balance by stating that wherever possible energy market should be competitive. Assured supply of such energy and technologies at all times is essential to providing energy security for all. Coal shall remain India's most important energy source till 2031-32 and possibly beyond. It is essential to creating a financially robust power sector in each state. Only financially healthy state power distribution utilities can provide the needed comfort on payment security to attract private investment in the power sector at internationally competitive tariffs. It is important to reduce the cost of power to increase both the competitiveness of the Indian economy and also to increase consumer welfare. Efficiency can be increased in energy extraction, conversion, transportation, as well as in consumption sources required a least-cost planning approach to provide a level playing field, and Megawatts so that regulators permit the same return on the investment needed to save a watt so to supply an additional power. India's energy resources can be augmented by exploration to find more coal, oil and gas, or by recovering a higher percentage of the in-place reserves. Isolated deposits of all hydro carbons including coal may be tapped economically through sub leases to the private sector. In case India can access cheap natural gas overseas under long-term (25-30 years) arrangements, it should consider setting up captive fertiliser and/or gas liquefaction facilities in such countries. This would essentially augment energy availability for India.

I. ROLE OF RENEWABLES

A longer-term perspective and keeping in mind there is need to develop domestic supply options as well as the need to diversify energy sources, renewables remain

important to India's energy sector. It would not be out of place to mention that solar power could be an important player in India attaining energy independence in the long run

II. ENSURING ENERGY SECURITY

Energy security could be maintained by reducing energy requirements and increasing efficiency are two very important measures to increase energy security. In order to provide energy to all ensuring energy security requires dealing with various risks. The threat to energy security arises not just from supply risks and the uncertainty of availability of imported energy, but also from possible disruptions or shortfalls in domestic production. Even when the country has adequate energy resources, technical failures may disrupt the supply of energy to some people. Generators could fail, transmission lines may trip or oil pipelines may spring a leak. One needs to provide security against such technical risks. Since 80 percent of global hydrocarbon reserves are controlled by national oil companies controlled by respective governments, oil diplomacy establishing bilateral economic, social and cultural ties can reduce supply risk.

III. BOOSTING ENERGY RELATED R&D

Demonstrations of new technologies, their economic assessment and further R&D to make the new technology acceptable and attractive to customers could follow, before finally leading to commercialisation and diffusion. Number of technology missions should be mounted for developing near-commercial technologies and rolling out new technologies in a time bound manner. These include coal technologies (where India should focus) for efficiency improvement; in-situ gasification; IGCC and carbon sequestration; solar technologies covering solar-thermal and photovoltaic's; bio-fuels such as bio-diesel and ethanol; bio-mass plantation and wood gasification, and community based bio-gas plants. All future requirement of power needs to be procured competitively by distribution licensees except in cases of expansion of existing projects or where there is a State controlled / owned company has identified developer which will bring down the costs.

IV. RURAL ELECTRIFICATION POLICY

It is relevant to mention that 56% of rural households, according to Census 2001, do not have access to electricity and the number of such households is as high

as 78 millions. The balance 44% of households, which have access, because of inadequacy of power, have to suffer power supply disruption of as many as 10-16 hours a day. Emphasis has been given on development of economic load to make the business of rural supply economically viable. Programmes for encouraging energy efficient equipments specially irrigation pump sets have to be taken up.

new technologies with the objective of making such technologies technologically sound and economically viable.

V. INDIA'S RESPONSE TOWARD CLIMATE CHANGE RELATED ISSUES

Our energy needs in future are going to grow rapidly. By the year 2012, meeting the demand for electricity will require an installed capacity of more than 2, 00,000 MW which is sixty percent more of what we have at present. It is also estimated that per capita consumption of electricity by 2012 has increased to 1000 units. Obviously, meeting such huge energy needs would call for exploitation of all available energy resources. We have come out with a National Electricity Policy that aims to exploit all possible resources to meet the demands of electricity in an efficient and cost effective manner. In many developing countries we have significant hydro electric power potential in our country and we intend to fully develop it. With our monsoon climate we get all our rainfall in only a few months of the year. We therefore, have an imperative need for storing water through both large and small dams aimed at the optimal utilization of our river basins to meet the objectives of flood control, irrigation, drinking water and hydro electric power generation, while taking into account site specific environmental concerns. Biomass is a renewable source of energy and forms perspective of climate change, we need to promote and maximize the use of biomass to the extent feasible for provision of energy. Nuclear energy also provides a modest 3 per cent of our electricity production. India would like to increase the share of nuclear energy in the coming decades. To the extent that we succeed, there would be a corresponding reduction in the use of fossil fuels and consequently of CO₂ emission. From the point of view of concerns of use of fossil fuel CO₂ emissions and climate change, a fresh look at nuclear energy in the international community would seem to be necessary. Continued use of fossil fuels for meeting the energy needs has raised concerns about climate change and particularly global warming across the world. We share these concerns. However, it is important to keep the perspective in view. Per capita emissions of carbon dioxide are the highest in high income countries. Energy efficiency is a necessity for a country with our levels of income and needs of development. India has made significant progress in this direction. Though India has not undertaken legally binding commitment to reduce greenhouse gas emissions but we are working with international community in research and development of