



Defining an Integrated Energy Strategy for India
Ensuring security, sufficiency, and sustainability





Preamble

The need for defining an effective and comprehensive energy strategy for India is now an urgent imperative. Not only are there growing uncertainties about the stability and security within the global energy market but the expectations and aspirations of the Indian people for a much higher rate of growth also require a stable, low-cost, and secure supply of energy. It is difficult to arrive at precise estimates of the exact economic cost of unsatisfactory and unreliable supply of energy in the country. However, it is necessary to list the adverse effects of the present situation on the structure and mix of India's energy supply as well as the economic distortions that this is causing. Some of these adverse effects are as follows.

- Growth of essentially redundant and uneconomic, so-called 'captive power units' for generating electricity based on petroleum products
- Proliferation of voltage stabilizers and other devices to protect electrical equipment from voltage and frequency fluctuations
- Drop in production due to disruptions and outages in power supply.

Estimates of the cost to the economy for each kilowatt-hour of energy not supplied are in the range of Rs 15–25. Energy shortages, therefore, cause the Indian economy a huge loss apart from the adverse effects mentioned above. Rough estimates indicate that if the energy sector in India were to reach international levels of performance, the country's gross domestic product could go up by two per cent per annum. Another aspect, which past energy decisions have not dealt with, is the huge unserved population that relies essentially on collection of poor quality biomass fuels.

A forward-looking energy strategy must necessarily focus on this large population, which is deprived of the supply of modern energy forms and must be provided access to adequate, reliable, and environmentally clean energy sources. The benefit of creating appropriate solutions for rural areas would be the potential for increased incomes, which would accrue from energy options that can create employment opportunities and value addition to local produce.

Much attention has been provided to Reliance's discovery of natural gas in the Krishna-Godavari basin and the prospects of further reserves being found in the same area. Any new discovery of a significant size would certainly provide further energy security for India, but it is still essential to continue diplomatic efforts for import of natural gas through pipelines from our neighbourhood, including Iran, countries of central Asia, Bangladesh, and possibly Myanmar. Indeed, the recent find in the Krishna-Godavari basin would provide encouragement to potential investors for further exploration activity in this area. However, given the uncertainties attached to finding hydrocarbon reserves and the gestation period involved in setting up infrastructure and supply arrangements, gas imports should be kept clearly in focus. We are nowhere near a situation where we can ignore large-scale gas imports as a solution to our energy problems.

With the rapid increase in imports of oil, India also remains vulnerable to political developments that could take place in different parts of the world and impact on secure supply of crude oil. The developments in Iraq and the manner in which they unfold could have serious implications for oil supply globally. The growth of the hydrocarbon industry in Russia is

also of great relevance to India, particularly after the investments made in the Sakhalin oil field. Major geopolitical changes taking place in the former Soviet Union have major implications for India. For instance, some major international oil companies that had become active in Kazakhstan are now reported to be packing up and leaving, which could create a vacuum in that country. Can India possibly step in to fill up this gap and, if so, how can a supply line be established for hydrocarbons to be imported from that country?

Perhaps the least studied aspect of energy policy lies in respect of energy-related environmental implications. In 2005, negotiations will officially begin on the next commitment period under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Growing pressure on large developing countries like India, related to emissions of greenhouse gases, would require some actions that could have implications on energy choices to be made by this country. It is necessary to start evaluating these choices and assessing their economic, social, and technological implications in-depth, so that an enlightened strategy can be developed.

A major lesson to be learned in formulating India's energy strategy can be found in the experience of other countries that have successfully restructured their economic systems in cognisance of realities in the energy sector. Major energy-consuming sectors, like transport, have to become an important part of the energy strategy. In the case of India specifically, a major reversal of trends that have led to a shift in the share of rail transport to road transport has to be brought about vigorously. This can be facilitated only through the mobilization of resources for an efficient public transport system, particularly in urban areas and much greater use of rail transport for inter-urban transportation. Fiscal policies to make this happen would be major prerequisites for bringing about the desired shift.

An energy strategy has to be dynamic and flexible. Ideally, energy sector developments can be studied through the use of appropriate energy economy models, which would permit quantitative assessments of any change in driving forces based on realistic estimates from time to time. At present, India's policy is not served by the use of any specific model or set of

models. This situation requires change because only then can the choices be evaluated—for instance, choices resulting from the recent discovery of natural gas and prospects of further discoveries as well as changes in the supply of oil in the international market resulting from developments in Iraq. In essence, a far more enlightened and better-informed approach has to be pursued for defining and implementing India's energy strategy. This document, it is expected, would be a small step in that direction.



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