

N K SINGH

Sunday , December 12, 2004

from the ringside

The energy paradigm: Back to the future

A few days ago, the Prime Minister spoke at the meeting of the advisory council on trade and industry on the need to de-politicise energy pricing. This reminder is none too early. Non-market based energy pricing distorts choices consumers and firms make about how much, and what type, of energy to use. These sentiments were also echoed at a BBC-sponsored discussion on the “energy challenge” at the recent India Economic Summit of the World Economic Forum. The round-table discussion in which I participated covered a gamut of subjects, from energy pricing, demand-supply balances, environmental consequences, to the need for greater R&D into affordable and environmentally friendly sources of energy.

Consider the following facts:

- While energy intensity — the energy consumption needed for a given amount of growth — is expected to marginally improve (decrease) by 1.2% per year in industrial economies and 1.8% in the developing countries, the overall magnitude of energy use will rise. (Figures are from the International Energy Outlook (IEO).
- The IEO projects that world marketed energy consumption will increase by 54 per cent before 2025, with the fastest growth in consumption from India and China. Developing Asia (including India and China) would account for 40 per cent of this increase.
- India will consume over 5 million barrels of oil a day by 2030, over double its current consumption.
- India itself, the world’s sixth largest energy consumer, currently relies on coal for more than half of its total energy needs.

We can clearly see that fossil fuels drive the economy, and that the need for this fuel will increase over the coming decades.

The projected supply of oil, and importantly, the limits of supply however depends on the assumptions made and the methodology employed in making these calculations. M Hubbert predicted in 1949 that “the oil age would be short,” and reiterated this basic message through his career. The World Energy Outlook now projects that supply will be fine to 2030, but there are uncertainties beyond. The deadlines have been progressively extended as new technologies for exploration and extraction get developed. Nevertheless, the cost of extraction will continue to rise. The June 2004 National Geographic argued credibly that the “end of cheap oil” is in sight.

Coal and natural gas reserves are projected to last longer — one estimate of natural

gas availability from the World Energy Outlook (WEO) notes that we have 66 more years' worth (at current production) of natural gas available.

Whatever the deadline for depletion, or at least the point at which the energy required to extract fossil fuels exceeds the energy content of the fuels, hydrocarbon resources are finite. The depletion of oil in particular will alter economic activity — both in terms of the cost of energy as an input as well as the availability of essential petro-chemical compounds used in plastics, fertiliser availability and other everyday materials.

The environmental consequences of continued dependence on fossil fuels are perhaps more immediate. Global emissions are likely to grow at 62 per cent over the next three years and the developing countries will overtake the developed economies by 2020. Even though emission intensity, i.e., emission per growth of unit, is expected to decline, there will be severe consequences arising out of inevitable climate changes arising from global warming.

Regardless of what version of the Doomsday scenario one accepts, or what timeline one believes, we need to begin now to develop policies to ensure future prosperity.

First, we need to diversify the coming risks due to environmental changes. Some areas would get warmer, others colder. Some areas will see rainfall increase, others decreases. Even if the new climate is not unbearable, the adjustment of infrastructure usage and lifestyle to newer locations would entail significant transitional costs, both economic and human. The sea level will rise, affecting coastal areas (including low-lying cities such as Mumbai). Weather models provide some indication of the impact of warming, but there is still great uncertainty. The challenge is to develop appropriate insurance scheme and contracts.

Second, we need to stem the impact that energy use has on the environment. We must provide a mechanism to internalise the positive externalities of sustainable energy use. Currently, the costs of more efficient or environmentally sound technologies are borne by individuals, while the environmental benefits are spread round the world. There is little incentive to switch to new technologies or conserve energy. How does one get consumers and industries to internalise the costs of energy use? One critical factor would be to encourage a move to efficiency based on domestic pricing of electricity. It is essential to have prices reflecting the cost of energy while encouraging consumers to make the right decision as well as international arrangements on to cap emissions and permitting firms to trade emission rights.

Third, there will be huge investments needed for extracting raw energy resources and related infrastructure with rising costs. The IEO projects an investment requirement of USD 500 billion. Financing this huge investment would be a major challenge and resources will only be forthcoming if pricing distortions are minimised.

Fourth, we need to strengthen diplomatic alliances and agreements to provide a framework for allocation and supply chains for increasingly scarce resources. The WEO estimates that 85 per cent of the increase in production of primary energy over the next two decades will take place outside of the OECD. Gas reserves are

heavily concentrated in

Russia, the Middle East and the transition countries. Energy users are generally located elsewhere, creating challenges for linking these two groups across political jurisdictions.

Fifth, it is time to appreciate the limitations of continuing dependence on conventional energy sources and move towards new technology to fill this gap. Governments can foment R&D in the short run with an enabling fiscal package, but only a sensible pricing policy would lead to sustain research as well as comparative economic production.

We would need to effectively address the multiplicity of economic and environmental challenges. The changing energy paradigm compels us to get “back to the future”.

Write to nksingh@expressindia.com