**Handling the energy crisis**

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Low-cost domestic coal can be reserved for the poor and the rich made to use renewable energy.

Societies across the globe have become used to guzzling energy, a phenomenon which has come into focus especially during the last few years. Despite the current recession and the climate imperative, global energy use has increased at an unprecedented rate during the last decade. Limits to available energy resources are hurting economies and curtailing development in poorer countries. India, being more vulnerable to energy shortages than most other countries, needs to urgently implement a multi-dimensional solution to avoid a crisis.

For the last 25 years, new oil sources that have been unearthed have been of lower volumes compared to the extraction of oil. At present, they account for less than half of oil production. Despite a substantial increase in oil prices, conventional oil production hasn't increased since 2004. Unconventional (difficult to extract) gas and oil are bridging part of the gap. However, their cost and environmental impacts are high. The coal situation is better, but the veracity of claimed reserves is doubtful.

**THREE-PRONGED STRATEGY**

To avert economic hardship and work towards mitigating climate change, we must find answers to the energy conundrum soon. This is possible through a three-pronged strategy to ‘replace, improve, and reduce'. Among these approaches, replacing conventional energy by renewable energy like wind, solar and biomass gets the most attention. The cost of power from wind is now comparable to that of power from imported coal. The Indian wind potential has recently been assessed at 100,000 MW, and is likely to be re-evaluated upwards. Solar energy costs have dramatically fallen and are only double that of coal-based power, and comparable to nuclear power. It is no surprise that the head of the Indian nuclear programme, Dr Kakodkar, now heads the solar mission!

Another approach should be to improve the method of using energy by extracting more work from that energy, through super-efficient appliances, vehicles and buildings. These equipments use half the energy to provide a similar level of service. Mass-scale adoption of new irrigation systems or green buildings, which use only half to a quarter of the energy, is constrained only by a limited trained workforce. Novel programmes to harness this massive potential are crucially needed as we build up our infrastructure. These two strategies, though essential, are insufficient to address the energy crisis if we don't curtail the unabated growth of energy-intensive activities. Some alternatives, like improved urban layouts that reduce commute distances, are feasible and involve little or no lifestyle changes.

However, in some other cases, moderating the extravagant lifestyles of the rich is essential, because certain activities consume much greater energy than others. A two-way flight from Delhi to Washington, once a year, consumes as much energy as 35 km of daily car driving round the year! And one 35-km journey by car consumes as much energy as running an LED tube-light for four hours every day for an entire year!

**TOUGHER CHALLENGE**

The Indian economy faces tougher energy challenges than some other large economies because a majority of the population has started using modern energy only recently, and their need for energy to lead a dignified life is bound to increase the demand substantially. However, our domestic energy resources are limited, and we are already importing 85 per cent of our oil and 15 per cent of our coal requirements.

These energy imports amount to 8 per cent of the national income, and are poised to claim a share beyond 10 per cent soon. This percentage is twice that of China, the US, and the EU. For every rupee of tax paid to the government, we give half a rupee to other countries which goes out of our economy — this certainly isn't a happy situation. If energy imports are reduced by half, 4 per cent of GDP would remain within our economy, increasing GDP growth by 1 per cent.

The failure to understand this phenomenon is a primary cause for concern. The sale of air-conditioners and air travel is doubling every four to five years, while the sale of cars is doubling every seven to eight years. This rapid increase in energy-guzzling activities by a small section of the elite is unsustainable and cannot be simply seen as a sign of development.

**ECONOMICALLY PRUDENT**

A sustainable future requires urgent action on all fronts of the ‘replace, improve, and reduce' strategy. Policy tools must integrate these strands of the solution. The central electricity regulator has suggested a green cess for commercial consumers, which can be used to promote solar energy and super-efficient appliances. Similarly, taxes on air travel or cars can be used to build public transport or efficient railways, which can help reduce air or car travel.

Electricity tariffs can also be linked to the efficiency of electricity use, by say, new commercial buildings. Based on the floor space of a building and its monthly electricity use, an energy guzzling office can be made to pay a higher tariff than a frugal office. Efficient buildings will then become a norm.

Reserving low-cost domestic coal for the basic needs of the poor, and making the rich use renewable energy if they indulge in extravagant energy consumption, is morally superior. It's also economically prudent, as it will promote energy security and stimulate the next industrial revolution of renewable energy. Such a transformation of India into an energy-efficient economy is possible, provided we change our national policies rapidly in this direction.

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