SOLAR POWER IS THE BEST

Recently we in Bhopal had a 16-hour power outage commencing from midnight until 4.00 next afternoon. The inverter saw us through the hot and stuffy night but it, too, lost its energy by the next afternoon. There was no alternative but to bear the acute discomfort of an air-less hot afternoon. Outages are frequent but this was out of the ordinary.

Lazing around through the day drenched in sweat in the sweltering heat my mind wandered and sauntered down the years that have gone by. In the early 1940s I used to be a child in Gwalior which was the capital of the eponymous princely state. Although we had electricity in our rented house there were many others in the neighbourhood, including that of a minister, which did not. Apparently, even then it took quite a bit to have one's house electrified. Living off the arterial road, we still had gas lamps to light up our rather broad, generally, deserted lane. Every evening a man would trudge down the lane with a ladder on his shoulders to light up the lamps mounted on somewhat low posts. He would repeat his trip in the early mornings to put out the lights. The lane got its electric streetlights much later.

Apart from lighting up the houses and streets electricity had very little non-industrial use in those days. Hardly any electrical appliances were available for domestic purposes except, of course, fans – table or ceiling. Right through the ‘40s, I recall, we managed the hot Gwalior summers with two table fans in combination with thick khas curtains with water dripping on them through perforated pipes. Radios, symbol for the well-to-do then with their roof-top antennas, were very few. The per capita carbon footprint was, naturally, negligible

As I grew older radios became ubiquitous, so much so that they would be raucously blaring out film songs from paan shops. Even during the first few post-Independence decades of "Hindu rate of (economic) growth" (of around 3%) the middle classes were inflating, though tardily, and electrical equipment and appliances appeared in the markets to feed their demand. Soon electric kettles, hot plates, mixer-grinders to refrigerators made their appearance for making things easier in the kitchen. For the living rooms there were radios, of course, followed by electrically operated turn-tables, record-changers, even radiograms and tape (spool) recorders.

To meet the exigencies of the weather there were either heaters or coolers, even an occasional air conditioner.

All these were confined to a very thin upper crust of the society – the rich and upper middle classes. Liberalisation of the economy in the early 1990s brought about a sea change. Not only MNCs descended in the country in large numbers, transfer of modern sophisticated technology also took place. The rapidly expanding middle classes accessed a whole new range of electrical appliances known as "white goods" and luxury items at prices that were competitive owing to the phenomenon of "globalisation". What were confined to a small segment progressively came within the reach of a much larger section of the population. As a result, electricity today doesn't simply light up the houses; it runs kitchens, helps in washing clothes, crockery and utensils, cools and heats the houses, entertains the family and provides 24X7 connectivity. No wonder, the per capita carbon footprint rose from 0.8 in 1990 to 1.3 in 2006 and yet nowhere near the footprint of giants like US which was 32.8 in 2006.

The veritable explosion of the middle classes and the accompanying growth of industry and commerce preordained a rise in demand for power. The supply, however, could never match the demand making shortages endemic. The country currently lives through a regime of extensive power cuts and prolonged outages. All talks of sufficiency in the near future are misleading as, firstly, there are not enough power projects in the pipeline and, secondly, in the current times of faster economic growth demand is always likely to outstrip the supply.

The problem is likely to get compounded as environmental considerations may inhibit the country's efforts to install many more coal-fired power plants unless it is able to, miraculously, find a cleaner thermal power technology. Similar considerations may hamper development of hydro power. Already there are protests, for example, against proposals for scores of hydro-power projects in the states of Uttarakhand, Himachal Pradesh and Arunachal Pradesh. The current government seems to be banking on nuclear energy. That too carries its own rather heavy baggage. Apart from the long gestation, not only there are concerns relating to security of the plants, there would also be difficulties in locating safe sites for disposal of the nuclear wastes.

So far coal has been the main source of our energy. Evidently the country has to now go after renewable energy in a big way. Among the renewables are solar, wind, tidal and biomass. However, for reasons that are obvious, solar power holds the key and could be the best bet for India. With about 300 clear and sunny days in a year India's theoretical solar power reception just on its land area is enough to produce energy that could be a thousand times greater than the likely demand in 2015, even if conversion efficiency of photovoltaic modules is pegged at a modest 10%.

Currently solar energy in the country works out to merely 0.4% of the total energy produced. The grid-interactive solar power as of June 2007 was merely 2.12 MW. Government-funded solar energy in India in 2005 accounted only for approximately 6.4 megawatt. However, the generation is disintegrated for applications that are mostly off-grid and petty in nature like street-lighting, water-heating, solar lanterns and so on.

Since the potential is enormous what is now required is a huge push for solar power generation that can be integrated, at least, with localised and regional grids. It is said that more energy falls on the world's deserts in six hours than the world consumes in a year. Africa's deserts receive enough power not only for Africa and Europe, but for the whole world. Hence, the Thar Desert with its locational advantages could become India's solar-energy hotspot.

Instead of entirely depending on the photovoltaic technology, which proves to be costlier unless subsidised like in Europe, concentrating solar (thermal) power needs to be given a big push. There are varied technologies that produce energy by concentrating the light rays onto a small surface to generate heat and use that heat to drive a turbine, which in turn drives a generator. Experts believe solar thermal power can play a significantly important role in meeting the yawning demand-supply gap (claimed to be 12% but actually is much more) for electricity.

While the Clinton Climate Foundation is mulling huge solar power initiatives of around 3000 MW each in the Rann (Gujarat) and Thar (Rajasthan) the Centre has launched the Jawaharlal Nehru Solar Mission. Mercifully, the Mission proposes, apart from striving for global leadership

in solar manufacturing, to launch a major R&D programme in solar energy – a crying need for the country, given the availability of surfeit of knowledge-workers.

According to Americans, solar power is no longer an "eco-fantasy". One wishes we Indians could ape Americans, especially the Californians, at least in respect of production of green energy. Power-starved as we are, like the Californians were in 1970, we need to act like the state by inducing the consumers to use less power, legislating for energy-efficiency in buildings, appliances or whatever, to foster entrepreneurial spirit among the industrialists and require the utilities to provide one-third of their power from renewables by 2020. Given the circumstances, that shouldn't be too much to ask for!

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