THE ENERGY MANDATE

India must revise its energy mix, shifting from coal and oil to solar and wind power, for a secure future

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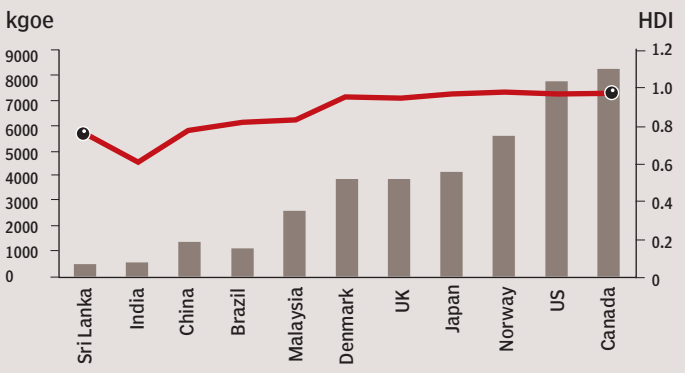
BLOOMBERG

Energy use and Human Development Index



Energy use and Human Development Index (HDI) link World Bank 2009; UNDP 2009
Source: Final Book Green India Report
Graphic by Sadhana Saxena

Ashish Kothari

IN THE global negotiations on saving the planet from catastrophic climate change, India and other G77 countries have refused to accept binding targets to reduce emissions, since we were not responsible for these emissions in the first place. This is justified: we have not been the culprits, why should we be punished? Or wait, is it justified? Would curbing our emissions on our own volition, really be a punishment? Would it hurt our prospects for development, as the government portrays?

Still Waiting, a report by Greenpeace, suggests otherwise, at least for energy generation. It shows how current strategies of energy generation and distribution have not only caused enormous ecological damage, but also that they have not helped the poor. Mega-projects feeding power into a centralised grid has not benefited an enormous section of India's population, and will not in the near future. Instead, there is a quicker, more efficient alternative to reach the poor and reduce emissions.

What's wrong with power?

India's electricity generation has gone up from a few hundred MW at the time of Independence, to over 1,50,000 MW. Yet, over 40% of the country's households remain without any power, and quite a lot more are without adequate power. Particularly telling is the inequity between cities and villages; while many of the big cities now have nearly 24-hour supply, most 'electrified' villages have half of that, and that too unreliable.

This inequity is compounded by the environmental impacts of such power generation. Over 53% of the current electricity capacity is from coal-based thermal plants, which are amongst the worst polluters and climate crunchers. Hydro-power, mostly from big dams, contribute about 25% of the power, and has caused enormous submergence of forests and displacement of millions of people. Interestingly, those most badly affected by such power generation are often the ones to get the least electricity. The case of Parli Thermal plant in Beed district, Maharashtra, is illustrative: for years villages around it, such as Dadahari Wadgaon, have been receiving its fly ash, but no power. The ash coats everything in the village, contaminates crops, and is believed to have caused high levels of respiratory diseases. This is a familiar story for hundreds of villages around coal power plants, or coal mines, across India.

Third, the report points to the gross inefficiency of centralised power generation. From the utilisation of generating capacity to end uses, rates of efficiency are abysmal compared to global best practices. The "overall end-use of coal power can only be about 10% of its potent energy." According to the Planning Commission, if we want to sustain an 8% economic growth rate over the next couple of decades, we need a power generation of 8,00,000 MW. The environmental and social consequences of this, if we stick to the same model, are scary.

The alternative: decentralised renewables

Greenpeace asserts that there is an alternative: decentralised, clean, renewable sources such as solar, wind, biomass, and micro-hydel. The report recommends an integrated use of these, with a mix of different sources that can cater to diverse local conditions and changing seasons (so that there is a back-up to solar during the monsoons). Such an approach would be environmentally much saner, and also reach energy to deprived sections much faster. To prove this, Greenpeace took up the case of Kalavati, a widow who became a media celebrity because Rahul Gandhi visited her powerless hut. Gandhi had made a case for nuclear power using Kalavati's example, but Greenpeace put up solar panels in the school in her village Jalka (Yavatmal district, Maharashtra) to show that this could reach power much faster. The panels have powered the school fans, making the summer bearable. The village has now sent a proposal to the panchayat asking for solar energy for every house.

Decentralised renewables can reduce and eventually eliminate the need for polluting, centralised power generation and provide communities with some control over energy sources. The technologies already exist, but would not be within the reach of poor households without supportive policies, subsidies or incentives. Simultaneously polluting sources should be taxed and discouraged through policy measures. In the long run of course we need to find alternative pathways to development itself, which de-link human welfare from ever-increasing consumption of materials and energy…. a distinct possibility as seen in initiatives around the world.

The report's argument is powerful, and the government would do well to heed it. It would however have been more persuasive with an analysis of how decentralised renewables could be more cost-effective than current sources. It could have dealt briefly with issues like the need for constant maintenance. It could have provided the total potential of such renewables (estimated to be at least 1,00,000 MW). Mention could also have been made of non-electricity sources of energy for cooking, heating, and so on. Finally, it could have been much harsher on rich consumers, by suggesting ways other than steep tariffs (which it recommends), to curb their irresponsible luxury consumption. These are disappointing omissions in an otherwise strong report.

The 11th Five Year Plan includes a hike in investment into renewables, with an aim to generate 3,000 MW. The National Solar Mission also aims at major expansion. However, most investment continues to be planned in thermal and big hydropower, so renewables will remain a small component of the country's energy mix. Even the solar mission plans include large plants, which do not solve the equity problems. These aspects have to change, if India is serious is about providing energy to the hundreds of millions deprived so far, in an environmentally responsible manner. In doing so, it would show itself as an active participant in humanity's response to climate change, and step up pressure on the industrial countries to also become responsible global citizens.

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MIND OVER MATTER

- Recycling one aluminium can can save enough energy to run an energy efficient bulb for 140 hours.
- Around 15 billion ordinary batteries are thrown away every year.
- Half of the world's forest has been destroyed, and we are losing a further 2% every year.
- Lighting accounts for up to 15% of your electricity bill.
- Some appliances, like digital set top boxes, cost nearly as much to run in standby mode as when they are switched on.
- By replacing normal bulbs with energy efficient ones you can save up to 70% on the cost of lighting.

Shikha Bhasin

INDIA'S INTERNATIONAL diplomacy around climate change, in both bilateral and multilateral forums, has almost always been closely linked to the country's concerns with energy security. The new India-US Green Initiative on Climate Change and Energy Security is the most recent example. There is good reason for this: with its growing economy, dependence on external energy supplies and huge population, a large proportion of which suffers from energy poverty, achieving a secure and diversified energy supply is central to ensuring the country's continued growth and sustainable development. Currently, 60% of India's citizens lack access to electricity. It is this, rather than concerted policy and efficient use of clean energy resources, that explains the country's relatively low current energy and carbon intensity. However, things may change. The national development goal of providing electricity access to India's stalled rural habitations by 2012, if met without a shift to cleaner energy systems, will start pushing up emissions while straining India's energy security and external dependence further.

India's energy mix—for electricity, heating, industry and transport—is dominated by coal and oil, which together account for 65% of total use. Biomass is the second largest source of energy for India's population, mainly through the use of dirty and inefficient conventional wood-stoves. While the biomass is locally sourced, 70% of our oil, 11% of our coal and 17% of our natural gas is imported.

Total installed electrical generating capacity is less than 150 gigawatts (GW), leading to estimated shortages of nearly 10%. According to the Integrated Energy Policy, India needs to grow from 327 million tonnes of oil equivalent (mtoe) in 2003-2004 to as high as 1858 mtoe in 2031.

If we continue down the traditional path, we will become more dependent on imported energy. It will also increase India's energy insecurity. Such a scenario would also represent a major stumbling block to the country's ability to adopt a sustainable low carbon growth path.

Getting the equation right

However, things needn't be this way. India has enormous scope for improving energy access without following the conventional high pollution route. Its huge potential wind and solar resources, as well as biogas, waste, and geothermal energy, could, if the right incentives and basic infrastructure are put in place, make India an international centre for innovation and production of clean energy. Addressing climate change and energy security can go hand-in-hand with new business opportunities.

While India is justified in calling for climate actions based on historical responsibility and has the right to expect external support for making clean energy investments, it cannot shy away from the responsibility it holds for its projected future energy needs and associated carbon emissions. The anticipated increase in energy utilisation calls for a serious rethink of India's energy security policy: an urgent acceleration in renewable sources of energy and execution of a targeted energy efficiency programme is the only way forward.

The Government of India (GoI) acknowledges the large scope for expansion of our renewable energy base. According to its findings, utilising just 1% of solar energy potential of the Indian landmass'—estimated at some 5,000 trillion kWh—could supply our energy needs until 2030. Its abundant , potentially very low cost and yields zero emissions. And, as recognised by The Solar Plan, the first mission under the National Action Plan on Climate Change (NAPCC), solar technology can be readily used in distributed systems off the grid, with its distributed off-grid potential making it ideal for rural electrification. The GoI aims to set up 20,000 MW of installed solar generation capacity by 2020; and 200,000 MW by 2050.

India also has a huge potential for wind energy. It has a current installed capacity of over 10,000 MW, ranking fifth in the world. The Ministry of New and Renewable Energy has been somewhat successful in incentivising investments and setting up renewable energy units through exemptions/reductions in excise duty and customs duty concessions on imports. The Clean Development Mechanism (CDM), a means for channeling finance to low carbon projects created under the Kyoto Protocol, has also played a crucial role in introducing renewable energy investments in India. India hosts the second largest number of CDM projects globally, facilitating over Rs 1.5 trillion in new investment. One of the expected outcomes of the upcoming meeting in Copenhagen is a more efficient and expanded CDM programme.

A small step...

With the NAPCC, India expects that renewable energy will constitute 10% of annual power additions by 2012 and 15% of total electricity production by 2032. However, clean energy sources will not alone deal with the challenges of energy security and climate change mitigation. The efficiency of transmission, distribution, and efficiency is also crucial. GoI is already taking action in the area of energy efficiency. Energy efficiency ratings will be mandatory for refrigerators, ACs, tube lights and transformers from January 2010 with listings of more appliances to follow; the Energy Conservation Building Code (ECBC) has been introduced by Delhi Government for all new government buildings; and the Fuel Efficiency Norms Plan for vehicles will be fully operational in two years. The newly approved National Mission on Energy Efficiency was commended by UN Chief Ban Ki-moon as part of India's commitment to curtail carbon emissions. But in the face of growing pressure to reduce the economy's carbon and energy intensity, India needs to accelerate and scale up its efficiency programmes, institutionalise practices such as labelling and certification, and invest in infrastructure, such as smart grids.

Also, it is important that the right signals be sent to the domestic and international investors. The upcoming CoP 15 at Copenhagen holds an important key for constructive and positive signalling to governments and industries alike. Following the negative sentiment around potential legal outcomes in Copenhagen, there is now reason for cautious optimism for a strong political deal by the end of the negotiations with the US, India and China having made positive and proactive statements in the past week.

Domestic policies play a crucial role here. For India, these primarily include tried and tested practices such as the construction of long term and sustainable feed-in tariffs, legislated renewable sales targets, as well as international sector-specific grants. These will provide the stability necessary to attract investment that in turn will create new business and employment opportunities, and so provide the cornerstone for a secure and sustainable future.

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