India's energy transition

Promise and peril

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Nomadic pastoralism is ancient in Changthang, Ladakh, and threatened by a proposed mega-solar park @ Ashish Kothari

India has had a historically insignificant role in causing the climate crisis, its cumulative emissions of greenhouse gases (GHGs) estimated to be about 4% of the global amount. Even now, its per capita contribution to emissions is well below the global average. But now, as the world's third largest emitter of GHGs (after China and the United States), India's transition to a climate-friendly economy is crucial. As important as this is for the globe, such a transition is also critical for its own people and environment.

India has the third largest energy demand in the world, with over 70% of its production coming from thermal power (primarily from coal, but also lignite, diesel and gas). The share of renewable and non-fossil fuel sources has been steadily rising, but is still a small part of the overall mix. In 2021, at the 26th UNFCC Conference of Parties, Prime Minister Narendra Modi committed to achieving the following goals by 2030: increasing 'non-fossil fuel' energy production to 500 GW, a 50% share of

the total power production by renewable energy (RE), 45% reduction in the economy's carbon intensity, and reduction of 1 billion tonnes carbon emissions. By 2070, he said, India would be 'net-zero' in carbon emissions.

Several aspects of the government's actions on energy are positive, such as a push to rooftop solar, farm-level solar pumps, and other distributed or decentralised RE options. This also incudes, encouraging or requiring buy-back arrangements from decentralised producers. Indian Railways, a public sector undertaking, are commissioning RE projects to help run trains and other operations, as also encouraging solar rooftop at railway stations.

A strong governmental push for RE would, in general, have lots of benefits. A recent study by the research group Climate Risk Horizons found that if Kerala replaces coal power purchases with renewable energy (RE) contracts, it can save over Rs. 9000 crores in 5 years. Earlier this year, Kerala's chief minister Pinarayi Vijayan had announced that the state will aim for 100% RE by 2040. Extrapolated to the country as a whole, the economic (and other) benefits are obvious.

Unfortunately, the potential promised by the above actions and proposals, is drowned by the many problematic aspects of the overall transition scenario. Briefly, I describe some below.

Pitfalls of the energy transition

While the commitment to reach 500 GW through 'non-fossil-fuel' and 'renewable' energy sounds positive, a very problematic part of this is that it includes large hydropower and nuclear plants. Both of these have enormous ecological, social and other costs. As one manifestation of this, continued construction of hydropower mega-dams in the Himalayan region have caused destabilisation, ecological loss, displacement of communities, and dispossession of lands and other resources their livelihoods depend on. Dam bursts in Uttarakhand, northern India, and most recently in Sikkim in north-east India are dramatic testimony to the dangers of massive infrastructure development in the fragile Himalaya. The rapid drying up of glaciers with impacts on water flows, and therefore on hydroelectricity potential, continues to be ignored. The government and dam-building companies do not seem to want to learn lessons, and are planning several more projects (many by the private sector), driven by profit-motivation and populist catering to burgeoning urban and industrial demands.

Even in the case of RE (solar, wind, geothermal, etc), much of the focus is on mega-projects with their own serious ecological and social impacts. Given that RE projects are excluded from the environment impact

assessment (EIA) and environmental clearance procedures, their impacts are not even assessed, let alone acknowledged and redressed (if it were even possible to redress them). Where already built, there is increasing documentation of adverse ecological and social impacts, e.g. of the Pavagada project in Karnataka, southern India, and a project in Nagaon, Assam. Many more on the anvil are being questioned for potential impacts. These include a 13 GW solar project proposed in the highly fragile ecological region of Changthang in Ladakh, crucial for unique wildlife and the nomadic pastoralism of Changpa communities, covering between 20,000 and 48,000 acres; and one proposed over 1400 acres next to the Chhari Dhand Conservation Reserve in Kachchh, western India, an Important Bird Area as also a crucial habitat for the livelihoods of Maldhari pastoralists. Globally, such projects are being called 'green landgrab' or even 'green colonialism' because of these troublesome aspects.

Another problem related to RE is that 80% of the solar projects are reportedly in only 5 states (Rajasthan, Maharashtra, Gujarat, Karnataka, Andhra Pradesh), creating further imbalances in the benefits that such projects could deliver.

One major focus of the government's climate response, is a move towards electric vehicles (EVs). Substantial financial provisions for this were announced in the 2023-24 national budget. As with RE, the rhetoric of environmental sustainability provides a cover to the many substantial ecological and social consequences of EVs. Firstly, if most of the electricity that such vehicles will use is still being generated through coal (as is the case in India), they are hardly clean! Secondly, worldwide, there is increasing concern about the impacts of related mining, e.g. of lithium and cobalt. In India, lithium reserves have been found in Kashmir, heralded as significant good news for the EV push. However, it also raises concerns about serious ecological damage and social displacement, in a region already suffering from inappropriate 'development' inputs after New Delhi took over its governance in 2019 (removing its special self-governing status). In August 2023, new legal measures were brought in to allow this mineral to be extracted by the private sector.

Even as the focus on RE and electrification of vehicles increases, the Indian government does not seem to be in any mood to reduce coal mining and thermal power; these are only getting further investments. New coal mining blocks continue to be given a green signal, including in some of the country's most biologically diverse and socially sensitive (including indigenous/ Adivasi) areas. This is even happening by sidestepping, or conveniently altering, environmental laws or norms. Several investigations have shown how government agencies have bent over backwards to enable corporate entities, including those those like

Adani who are closest to the power corridors in New Delhi, get permissions for such mining or power plants in areas and ways they should never have been allowed.

One of the biggest issues on which there is hardly any discussion in official circles, is demand management. Almost no-one is asking: how much energy / electricity demand is justified, from which sections of population, and who decides? Projections suggest that by 2040, India's energy demand will be about 11% of global demand (up from about 5% in 2016). The government's projections are all based on demand, and how this can be met from any and every source, rather than asking basic questions about whether all this demand is actually necessary. Over the last few decades, luxury and wasteful demand and use has significantly grown, as is evident to anyone looking at night-time glitz in India's cities, or anyone who wonders why malls and airports are over-cooled, or anyone who dares ask why cricket matches have to happen under floodlights rather than when there is daylight.

Without altering the way that society looks at energy (especially electricity), any gains made through technological changes could be easily wiped out by the rise in demand. This was one of the conclusions reached in a study on EVs replacing fossil fuel vehicles in Europe. It is, in any case, part of the long-established Jevon's Paradox, very visible in our cities when flyovers are built. Briefly, they ease traffic congestion, but this is soon overtaken by many more vehicles coming onto the streets in the hope that there is now easier traffic to navigate.

Finally, the 'net-zero' approach has many flaws. It depends significantly on as-yet unproven technologies and/ or massive plantations with their own socio-ecological impacts. It is also too carbon-centric, ignoring the fact that emissions from power stations, vehicles, etc. include many other poisonous substances, and if allowed to continue with the promise that the carbon dioxide part will be captured or absorbed, will continue to affect people and the environment. Much of the 'net-zero' approach is based on techno-fixes which, like the case of RE and EVs, does not really deal with the fundamental social, political, economic determinants of unsustainability. These and other problems plague the Indian government's pledge to be net-zero by 2070.

Absence of democratic spaces

A fundamental issue related to all the above, is the absence of democratic spaces in energy transition. Much of the decision-making is within governmental and corporate offices, and there is little involvement of the range of relevant civil society. Particularly missing is meaningful consultation with and consent of, communities on the ground most impacted by it as 'beneficiaries' or as people whose lands/ resources are

taken away for it. The transition has become the domain largely of technical 'experts' in formal institutions, bureaucrats, the private corporate sector, and politicians.

Linked to this is a very inadequate focus on a just transition, in which the move from fossil fuels to RE and other climate-sensitive approaches, is centred around notions of environmental and social justice. For instance, is there consideration for the workers and others who will be impacted in such a move – are they prepared, and being retrained to take on dignified alternative livelihoods, are they involved in the discussions from the beginning and part of designing future pathways?

Indeed, all the above points need to also be seen in the context of India's overall economic development model, and its fixation on GDP growth as the dominant indicator of progress. Unending growth is simply unsustainable. Both globally and in India, ever-growing material and energy production and flows have already pushed human activities beyond carrying capacity, with catastrophic consequences seen not only with the climate crisis but also declining production on land and in our seas, looming mass extinction of wildlife, pollution and toxic wastes in every part of the earth, and much else. These impacts bite back on economic growth itself - for instance a 2013 World Bank report estimated losses due to environmental degradation in India to amount to 5.7% of GDP. More importantly, they destroy the lives and livelihoods of millions of people, and devastate the rest of nature. Yet, driven by capitalist profits and state power, this model of 'development' continues to be pushed.

Are there alternatives?

There are alternative pathways to human well-being, that also sustain the earth. These include decentralised, community-managed RE and other relevant technologies such as passive solar construction. A recent report by the Council on Energy, Environment and Water and Villgro Innovations Foundation found that these could potentially impact 37 million livelihoods in India's agriculture and textile sectors. Not to mention the enormous health, ecological, and social benefits of replacing dirty energy, and the fact that DRE can quickly reach and be managed by communities and households. As mentioned above, some elements of the government's energy transition plans do promote these, but they need to become the major plank, not an 'add-on' to mega-projects. Alternatives also include more comprehensive consideration of the full range of energy (not only electricity but also biomass, human power, passive solar, etc).

Equally if not more importantly, there are many options for regulating demand through regulations and behavioural change, and for redistribution of energy away from wasteful and luxury users (such as over-cooled malls and rich households with ACs in every room), to those who currently don't have enough. A host of socio-cultural, economic, political transformations are needed, and already being demonstrated in alternative initiatives across the globe. But these are as yet small and scattered, requiring much greater civil society and governmental attention.

A very interesting process involving trade unions, environmental groups, feminist organisations and others produced climate justice charter for South Africa, but there is no similar process in India as yet. I can't see the government undertaking or even backing it, so it is up to civil society organisations and people's movements to consider doing something like this, and using it as an advocacy tool as also to guide their own ground-level actions. A recent report has several interesting ideas for such transition in South Asia, which can be used as one base to develop a more comprehensive, grounded, consultative strategy and action plan that has communities and civil society as key actors.

Embedding the energy sector within an economy and society that is focused on basic needs and mindful of ecological limits, is not a pipedream. It is eminently feasible, and is indeed humanity's most urgent imperative.

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