

The coal scourge

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Coal is a widely used but fast depleting energy resource. The extensive land degradation that coal mining involves, the widespread loss of livelihoods and toxic pollution that coal-based projects cause and the long-term adverse impact of burning coal on the global climate have raised serious concerns worldwide. A cursory look at some of our coal mining areas in the eastern and the central regions of the country will reveal the extent of human trauma that coal mining has caused in those regions. An interaction with those who live in the vicinity of any coal-based power plant will corroborate the havoc caused by the huge quantities of fly ash dumped all around. Despite the much touted claim that India has “abundant” coal reserves, it is a fact that, at the rate at which coal is being consumed in our case, the extractable and usable coal resources will not last beyond 15 years. It is ironic that we should continue to pursue the use of coal as the primary source of energy in India.

At the time of Independence, India’s coal production was hardly 33 MMT. Nationalisation of private coal companies in 1973 provided an impetus to coal mining. Coal production which was 70 MMT in 1973 went up to 557 MMT by the end of 2012-13. Non-coking coal, extracted largely from opencast mines, progressively became the predominant fuel for electricity generation. More than 60% of non-coking coal is consumed in the electricity sector. The coal-based (including lignite) electricity generation capacity, which was only 756 MW at the time of Independence, increased to 1,30,221 MW by the end of 2013.

Post-2003 deluge:

In the year 2003, the Ministry of Power enacted the new Electricity Act which opened the floodgates to private “merchant” power projects. The States went berserk in diverting large extents of land at nominal prices to private players to set up such projects, in violation of land-use restrictions and environmental regulations. This in turn created an artificial demand for coal, prompting the Ministry of Coal to indiscriminately allot captive coal blocks to private players, often through highly questionable, non-transparent procedures. The Ministry of Environment & Forests (MOEF), under pressure from private players, ignored the established norms of conservation of the environment and cleared both coal mining projects and power projects at a breakneck speed. This was contrary to the general perception that there were delays in MOEF clearing coal and power projects. The facts stated below speak for themselves.

Exaggerated coal demand:

During 2004-12, the Coal Ministry allotted 160 captive coal blocks to private parties. During the same period, MOEF cleared 181 coal projects, both pending and new ones. The rate of project clearance post-2004 ranged around 90-94% with the average clearance time ranging around 11 months to 1 year 5 months.

As far as power projects are concerned, Prayas, a Pune-based NGO analysed the status of environment clearances in August, 2011 (Prayas: “Thermal Power Plants on the Anvil-

Implications and the need for rationalisation”). The study revealed that, in addition to the then existing 192,193 MW of coal and gas-based power projects already operating, project proposals covering 508,907 MW were either cleared or in an advanced stage of clearance. In other words, if these projects had materialised during the next 4-5 years, the cumulative thermal capacity, largely coal-based, would be 701,820 MW, a figure that would be thrice the thermal capacity projected till 2032 by the Planning Commission in its Integrated Energy Policy (IPE) report!

Planning for toxic pollution clusters:

The Prayas study revealed several interesting but disturbing trends.

73% of the projects in the pipeline cited above are owned by private parties. Out of them, 10 corporate groups account for more than 160,000 MW.

The geographical distribution of these projects is a cause of serious concern. Only 30 districts (out of the total 626 districts in India), many of them adjacent to one another, will have more than half the proposed number of power projects with a capacity of 384,421 MW. Out of this, 83,425 MW will be in eight industrial clusters already identified by CPCB as “critically polluted areas”.

As far as Tamil Nadu is concerned, among the districts where there will be heavy concentration of new coal-based power projects, Tuticorin with 16,460 MW, Nagapattinam with 14,701 MW and Cuddalore with 10,140 MW stand at serial numbers 9, 12 and 15 in the descending order. In other words, three Tamil Nadu districts stood prominently in the upper half of the 30 districts which would become toxic hubs of pollution in the country! Cheyyur UMPP that you have visited is going to be a part of one of these polluting clusters.

Fly ash from coal, whether it is indigenous or imported, contains toxic pollutants including heavy metals like arsenic and cadmium, sulphur, mercury (Down to Earth, October 16-31, 2012) and radioactive isotopes of Uranium, Thorium and Potassium (Radioelemental characterisation of flyash from Chandrapur Super Thermal Power Station, Maharashtra- Rajeev Menon, P. Raja, Deepak Malpe, K.S.V. Subramaniam and V. Balaram in Current Science Vol. 100 No.12.25 June 2011). An Observer investigation (“India's generation of children crippled by uranium waste” by Gethin Chamberlin in The Observer, August 30, 2009) found a correlation between a dramatic rise in birth defects in the Punjab and pollution from coal-fired power plants. The Down to Earth article referred above revealed the presence of mercury in excess of the safe levels in the blood samples of persons living close to coal-based power plants in the Singrauli region of UP. The fact that neither MOEF nor any other agency of the government has cared to recognise this bitter truth and address the health concerns of the people living near the power plants, nor review the existing plans to expand coal-based electricity generation is truly worrisome. The government should realise that using coal as a source of electricity amounts to subjecting the people in those regions to a silent killer.

The toxic pollutants released from fly ash also enter the country's food chain on a much larger scale and cause widespread health concerns. To some extent, the expenditure incurred by the

government on public healthcare becomes infructuous when one of the root causes of the ill-health of the people remains unaddressed.

The UNEP Convention on Mercury (Minamata Convention) was adopted by 96 countries on October 10, 2010. Though mercury poisoning is as much a threat to the health of the people in India as to those in the other countries, India is yet to adopt that Convention.

Deficient environment impact assessment procedures:

The existing environment impact assessment procedures of MOEF fail to address the health impacts of mercury and radioactive pollutants in fly ash, though the research findings on the subject are available with that Ministry. It is pertinent to mention here that these procedures fail to address the cumulative impact of industrial clusters, especially the kind of power pollution hubs that are developing fast in our country. The National Green Tribunal (NGT) has, in some cases, pronounced landmark judgements cautioning MOEF to look into this but the follow-up action on the part of MOEF has not been effective.

One should recognise the fact that there are no 100% pollution mitigation technologies available today. This is compounded by the fact that the statutory regulatory authorities in place are not really independent enough to ensure that the pollution levels around the power plants are at least kept within the safe limits.

If the end-use of coal has such widespread toxic impacts on the people, the upstream activities of coal mining and electricity generation displace and marginalise large numbers of families, degrade agricultural and forest lands and destroy the local environment. The coal mining areas in the eastern and the central regions of the country present a picture of human trauma at its worst. Certainly, a business-as-usual approach in this sector is unacceptable.

Is coal mining sustainable?

The protagonists of “development”, a term as understood by the present day rulers, justify expansion of coal-based electricity generation on the ground that India is one among a few countries which are endowed with “abundant” coal reserves and, therefore, we should exploit that coal to generate electricity. The idea of “abundance” is misconceived. While it may be true that India figures among the countries which have fairly large coal reserves, at the present rate of coal consumption, the reserves will not last long.

The Coal Mine Planning & Design Institute (CMPDI), a subsidiary of CIL, has estimated the extractable coal resources in India under the UN Framework Classification (UNFC) to be 18.2 billion tonnes (BMT). UNFC takes into account the technological constraints and the techno-economic viability of coal mining on the basis of the cost of coal extraction. If one were also to consider the non-extractability of coal lying under dense forest growth and in Constitutionally protected (under the Fifth Schedule) tribal tracts, this estimate would come down significantly. Even assuming that we can somehow extract and use 18.2 BMT, considering that the average coal requirement for power generation alone, as projected in the Integrated Energy Policy report of the Planning Commission over a time horizon extending up to 2032 works out to 1,200 MMT per year, these reserves will not last beyond 15 years. Even if CIL were to add to the reserves

through additional exploration effort in the coming years, considering that most of the accessible blocks have already been explored, it would at best extend this time frame by another 5 years. Therefore, one should face the bitter truth that India's coal reserves would not last more than 20 years on an optimistic basis.

During the last decade or so, despite objections raised by the Ministry of Environment & Forests, the Ministry of Coal, propelled by influential private players, has succeeded in making serious inroads into areas covered under dense forest growth (no-go areas) in the name of "development", without a scientific appraisal of the costs and benefits of coal mining vis-a-vis loss of valuable bio-resources and bio-diversity. Indiscriminate destruction of the country's precious forest wealth will affect India's socio-economic development in the long run.

The "development" argument to justify new coal mining & electricity generation projects:

Technically, coal and gas-based thermal power plants and nuclear power projects cater to the steady component of the demand for electricity, whereas hydro-electric power stations with storage reservoirs can meet the peaks in the demand. Over the years, as a result of the ease with which thermal power plants can be set up and the attractive price incentives available to power developers in one-sided power purchase agreements, the share of thermal generation has gone up steeply, pushing down the share of hydro generation to 20%. Such a generation imbalance, coupled with the technical losses arising from under-investments in the transmission and distribution systems, has enhanced the unit cost of electricity at the point where it is delivered to the consumer. Compounding this further, the efficiency of the end-use appliances (filament bulbs, fans, heaters, coolers, motors) in our case has remained abysmally low. Instead of focusing attention on ways and means to reduce the downstream inefficiencies, electricity planning in India has remained, by and large, supply-oriented, aiming more at adding new MWs rather than investing on facilities that enhance the efficiencies.

Planning Commission's IEP study has projected the total requirement of electricity generation capacity by 2032 to be 778,000 MW. Out of this, based on some efficiency improvements in the transmission and distribution systems and a certain degree of reliance on renewables, IEP projected a coal-based capacity of 269,997 MW, gas-based capacity of 69,815 MW and nuclear capacity of 63,060 MW, in addition to other modes of generation. Considering that indigenous coal and gas resources will last less than 15 years and considering that the nuclear option is not only highly expensive but also potentially unsafe, this is clearly an unsustainable scenario. Apart from the patent infeasibility of these options, the government cannot afford to be insensitive to the loss of livelihoods that the coal mining and power projects cause and the toxicity of the fly ash that they generate, which has a deleterious impact on the health of the people.

A time has come when all of us should recognise the unpalatable fact that we have reached the end of the tether as far as conventional energy sources are concerned. It is not a question of choice; it is an inescapable, harsh reality. Hereafter, any sensible planner of energy should focus attention on saving scarce energy resources rather than frittering them away, as we are doing now. Rational energy planning should shift the focus from new MWs to saved MWs or, in "negawatts", a term coined by Amory Lovins [Amory Lovins' book: "Soft Energy Paths" (1977)]. There is no alternative to progressively shifting in favour of distributed generation

based on renewables. Supply-oriented planning in energy, especially electricity, has outlived its time. Sooner we face this hard reality, the better it will be from the point of view of sustainability.

Limits to Growth:

In 1972 and 1974, the Club of Rome, in its two ominous studies, “The Limits to Growth” and “Mankind at the Turning Point”, cautioned the global leaders that, if they continue to proceed with the business-as-usual approach to exploitation of the planet's resources, we would reach the end of the road within a century. The world leaders brushed aside these studies, saying that new technologies could surmount all such limits. During the last two decades, the world has woken up to new realities, namely, the spectre of global warming caused by coal burning, in addition to the limits to growth arising on account of escalating ozone depletion, increasing ocean acidification, rapidly depleting bio-resources/ bio-diversity, uncontrolled spread of toxic pollution, increasing stress on land, fresh water systems and life-supporting nitrogen & phosphorous cycles and so on.

The present paradigm of resource-intensive economic growth is clearly unsustainable. We need to redefine “development”! If it is to be benign and sustainable, development will necessarily have to be people-oriented.