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Reservoirs of sorrow

The karma of dams

IN his article titled 'Reservoirs for the future: The dharma of dams' (IE, October 23), C.V.J. Varma eloquently describes the growing need for water and power in India and concludes that it is the duty (or dharma) of dams to meet these growing needs. Though I have no quarrel with his facts, I would like to question his conclusions on the basis of the actual performance (karma) of large dams in India.

In a recent report written by some of us for the World Commission on Dams (WCD), 'Large Dams: India's Experience', an exhaustive look at the facts and figures available establishes that until 1978, most dams were not assessed for their environmental and social impacts. Even when they began to be assessed, alternatives to the dam were never assessed and mostly not even considered. Also, that the current system of granting environmental clearances is subject to all sorts of political and administrative pressures, resulting in clearances being granted to projects without assessing their impacts or even when they are non-viable. What is worse, the concerned ministry has little ability to ensure that the parameters and conditions of clearance are adhered to. In fact, they are disregarded and flouted, as a rule.

Perhaps the best indicator of how lightly the nation has taken the environmental and social damage that large dams cause is the absence of data on these aspects. We do not know what the environmental impacts of most dams were. In most cases we do not know whether any of the safeguards prescribed actually worked. We do not even know the total number of people displaced or the area of forests submerged by large dams.

In the WCD report an attempt is made to gather together all available information and, by extrapolation, get some understanding of the magnitude of the impacts. Accordingly, the amount of forests submerged by large dams, between 1980 and 2000, works out to be between 9.1 million hectares (our calculation) and 4.5 million hectares (based on the Central Water Commission data). And this, when we are already well below the stipulated 33 per cent forest cover.

Similarly, the data provided by the Central Power and Irrigation Board of the Government of India for 19 dams shows that in all but one of these dams (Machkund), the rate of siltation of the reservoir is higher than anticipated. This has serious repercussions on the life, the safety and the economic viability of the dam. The excess rate of siltation ranges from 115 per cent in Kangsabati to 809 per cent in Maithon, with 10 of the 19 having an actual rate that is over 200 per cent of the anticipated rate. In an alternate data set, of the CWC, for 13 of these projects, the variation is between 649 per cent (Beas unit II) to 88 per cent (Panchet). Eight of these 13 show observed rates of over 200 per cent.

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Even this level of data is not available for the numerous other well known adverse environmental impacts of large dams, including impacts upstream and on the catchment; on biodiversity, species and ecosystems; on human health; on water quality; on reservoir induced seismicity; on micro climate; on water availability downstream; on salt water ingress, and on water logging and salinity.

Dam failure and emergency releases of water pose a threat to downstream populations. Again, though no comprehensive data are available, the havoc wreaked downstream by, for example, the Bhakra Dam (in late 1970s and again in 1988) and the Rihand Dam in 1997, is well known. Dr Y.K. Murthy, a former chairman of the Central Water and Power Commission, has concluded that, of the 131 dams studied by him, 36 manifested distress, in 20 the spillways were inadequate and in 25 the freeboards were inadequate, all compromising the safety of the dam. In 90 of the dams studied there was no emergency reservoir operations plan.

Perhaps the most heart-rending aspect of large dams is the displacement of human populations. Again, no comprehensive data are available. A study by the CWC, of 54 projects, showed a per-dam submergence of 24,555 ha. The same study showed a per-hectare displacement of 1.1 person. If one were to extrapolate these figures to the 4291 large dams built in India, the total displacement figure would be 11,59,02055 or 11.5 crore in the last 100 years or so. Our own calculations, based on a study of 213 dams, show that the average submergence per dam was 8748 ha and the average displacement per hectare (based on data of 83 dams) was 1.51 per hectare. Extrapolating from these, the total figure of displacement comes to 5,66,81878 or 5.6 crores. Perhaps even this is an exaggeration, but what it does establish is that those displaced by large dams number not in the hundreds or the thousands but in crores. Further, data available for 34 dams shows that tribals formed 47 per cent of those displaced, despite the fact that their national share of population is only a little over eight per cent.

So, clearly, the major costs of large dams are borne by the poor and the weak. But who are the major beneficiaries? The irrigation benefits go to those downstream and, among them, disproportionately to the large farmers. Similarly, the peaking power that dams provide goes primarily to meet the peak demand of the urban rich and the industry. What does the nation gain as a whole? According to the WCD study, large dams, after 1990, show no economic benefits over costs and only have a distributional function, where "the benefits are reaped by farmers and others in the command areas and the costs are borne by the society at large, the tax payers and the project-affected people. There is possibly no net gain to society from major and medium irrigation projects". Even if hydroelectric generation is taken into consideration, .."the gains from power are unlikely to compensate for losses from irrigation unless hydropower generation is extremely large". And this is when only a small proportion of the environmental and social costs are being internalised.

So, we have a situation today where thousands of dams have been built, with little or no environmental assessments and safeguards, and huge adverse social impacts. Millions of hectares of forests have been destroyed, huge areas have become water logged, the incidence of water related diseases has increased, lakhs of people have been thrown out of their homes, mainly tribals, the poor and the weak. And all this to create structures that, even without acknowledging most of the environmental and social costs, add not a rupee worth of value to the Indian economy! All they do is re-distribute the existing resources so that the poor are further deprived and the relatively well off get the benefits. If this is development, then let me awake in another world.

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