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# Strategies for Accelerated Hydropower Development

The Government has taken a number of initiatives in recent years to improve the functioning of the power sector and attract investments. There has also been a special emphasis on accelerated hydropower development. These are briefly discussed below.

## Policy Liberalization

As mentioned earlier the power sector was opened up for private sector participation in generation in 1991 with a view to bring in additional resources for capacity addition including in hydropower. Private sector entrepreneurs were allowed to set up enterprises, either as licensees, or as generating companies. The generated power was to be sold to state electricity boards (SEBs) on the basis of a power purchase agreement. Further, a debt equity ratio of up to 4:1 was made permissible for all prospective private enterprise entrants (i.e., for both licensees and generating companies). In order to ensure that the investor brings in additionality of resources to the sector, it was also stipulated that not less than 60% of the total outlay for the project has to come from sources other than Indian public financial institutions (FIs).

Subsequently, in March 1992 a tariff notification was issued incorporating several incentives to private developers which broadly covered incentives for better availability of machines, for generation of extra energy above the design energy, compensation for hydrological risks, etc. Later, up to 100% foreign equity participation was also permitted.

## Policy on Hydropower Development (1998)

The above liberalization measures did not provide expected impetus to hydropower development; it also did not generate much interest in private sector participation in hydropower development. Based on a review of the situation, the Government brought out a policy on hydropower development in 1998, which, inter alia, laid down several policy instruments like full budgetary support to ongoing projects, establishment of a power development fund, a mechanism to resolve inter-state issues, favorable tariff formulation, etc. The policy also outlined that the selection process of private developers would be such that for projects up to 100 MW in capacity, the memorandum of understanding (MOU) route would be adopted, whereas for projects above 100 MW capacity, a competitive bidding process would be adopted. Although all these policy measures could not be effectively implemented, the Government has been pushing ahead with strategic initiatives from time to time.

## Ranking of Potential Hydro Sites

A need was also felt in the meantime to evolve a comprehensive approach for the phased development of the large untapped potential. With this in view, CEA prepared a vision document in 2001 giving a road map for expediting hydropower development in the country. This document indicated that in order to harness the entire remaining assessed hydropower potential of the country by 2025–2026, about Rs5,000 billion would be required for project implementation based on present day costs and another Rs50 billion would be required for survey and investigations, which would need to be completed by 2016–2017.<sup>14</sup>

As a follow-up of the recommendations contained in the vision document, CEA carried out preliminary ranking studies of about 400 schemes in the six river basins of the country. Schemes totaling to about 107,000 MW have been ranked into five categories as A, B, C, D and E from the point of view of attractiveness (in decreasing order) for implementation. The aspects considered are resettlement and rehabilitation (R&R) issues, inter-state/international aspects, potential of the scheme, type and height of dam, length of tunnel/channel, accessibility of site, present status of the project and the status of upstream or downstream developments. The preliminary ranking study report released in February 2002 was expected to provide information to developers on the relative risks and attractiveness of different potential sites and also to take up more detailed investigations including preparation of feasibility reports.

## Prime Minister's 50,000 MW Hydroelectric Initiative

In order to give further fillip for development of hydro sector, the Prime Minister of India announced a 50,000 MW hydro initiative in May 2003. Under this program prefeasibility reports (PFRs) of 162 new projects with an aggregate capacity of 47,930 MW distributed across 16 states have been prepared. Out of these 162 schemes, 73 schemes having first year indicative tariff below Rs2.50 have been selected for preparation of detailed project reports (DPRs) and subsequent implementation.<sup>15</sup> The installed capacity of these schemes is about 33,000 MW. Of these schemes (32,000 MW), 70 are located in Brahmaputra, Indus and Ganga basins in the north and north-eastern part of the country. A list of these schemes is given in Appendix 2.

Studies done so far indicate prospects of many projects delivering power at a cost of Rs1.50–2.50 per unit. It is expected that the availability of a shelf of well-investigated DPRs would help to minimize the gestation period, firm up the costs and also enliven the interest of the private sector in taking up hydro projects.

## Streamlining of Clearance Procedures

Recognizing the fact that sanctioning of projects is itself a process that requires streamlining, the MOP, Ministry of Finance (MOF), MOEF and the Planning Commission are working to minimize the time cycle for sanctions by reengineering processes. Special emphasis is being given to expediting environmental clearances, as detailed in Attachment A to Appendix 3. Further, the National Policy on Resettlement and Rehabilitation for Project-Affected Families, 2003 (NPRR, 2003) notified by the Ministry of Rural Development (MORD) is expected to provide a better appreciation of the issues as well as the obligations and risks on the part of developers.

A TEC from CEA is now required only in cases where inter-state water issues are involved or the capital cost of the project exceeds Rs25 billion as mentioned in Appendix 3. CEA has also evolved

<sup>14</sup> CEA. 2001. Preliminary Ranking Study of Hydro-electric Schemes.

<sup>15</sup> The cost of preparation of DPRs is proposed to be recovered later from the developers.

modalities for simplified transfer of TECs from one agency to another. During the period 1999–2004 TECs were transferred in favor of new executive agencies in eight hydropower projects<sup>16</sup>.

As mentioned earlier, the ECC, headed by the Prime Minister of India, has also decided to set up a panel under the cabinet secretary to look into issues concerning hydropower plants for expediting approvals.

In case of projects to be executed by the central power sector units (CPSUs), the Government has approved a three-stage clearance procedure in consultation with MOF and MOEF. The salient features of this procedure are given in Box 2. The first and second stage clearance system has helped to cut down construction time by at least 2 years and consequently, the project cycle time for a typical project has been reduced from over 7 years to around 5 years<sup>17</sup>.

### Box 2. 3-Stage Clearance Process for Central Sector Projects

**Stage I:** Under Stage I, the central power sector units (CPSUs) will incur expenditure on survey, investigations and preparation of a prefeasibility report for hydro projects and expenditure up to Rs100 million will be sanctioned by Ministry of Power subject to the condition that the proposed hydro project is included in the 5-year plan or long-term Hydro Electric Power Development Plan. For an expenditure of more than Rs100 million, the same would be considered by a committee of the Public Investment Board (PIB). The activities under Stage 1 shall be completed within 1 year from the date of sanction.

**Stage II:** Under this stage, the CPSUs will undertake activities relating to detailed investigations and preparation of detailed project reports (DPRs). Proposals costing Rs200 million and more will require the approval of Finance Minister, while those involving a cost of over Rs500 million would require approval of the Cabinet Committee on Economic Affairs (CCEA). Projects which have been found to be commercially viable and have obtained site clearance from the Ministry of Environment and Forests (MOEF) would be considered for Stage II. Stage II development would involve preparation of a DPR, pre-construction works, development of infrastructure facilities and land acquisition, etc. Activities under Stage II shall normally be completed within 1.5 years from the date of sanction.

**Stage III:** This stage would require approval of PIB/CCEA for investment decision in respect of construction of the project. Approval of PIB /CCEA would be sought after the Environment & Forest clearance is obtained from MOEF and the techno-economic clearance from the Central Electricity Authority.

## Electricity Act, 2003

This Act is expected to provide a new momentum for the overall development of the power sector in India, including for hydropower development. The provisions pertaining to trading, open access, stand-alone systems, exemption of a power generating company to obtain a license, mandatory share for renewables and the development of the national power grid are of special relevance in this context.

<sup>16</sup> Report of the Standing Committee on Energy, August 2005.

<sup>17</sup> Interview with Mr. R. V. Shani, Powerline, January 2006.

In 2005 MOP issued guidelines for determining the tariff by the bidding process. These envisage that the purchaser of power shall procure the site, get all the requisite clearances, and then bid for developing the project at the lowest cost of developed power on the basis of tariff. The guidelines for procurement of power are given separately for base load and for peak load requirements, which should facilitate setting up of peaking power plants.

## Institutional and Budgetary Support

Considering that the public sector has played a major and almost exclusive role in developing hydropower, the world over including the developed countries and the fact that hydro in the privately owned independent power producer (IPP) mode has still to catch on, the Government proposes to pursue a judicious mix of both public and private sector options for ensuring accelerated hydro development. The efforts being made in pursuing the private sector option are covered in detail in Section VI. The aim is to generate confidence in the prospective entrepreneurs/developers and offer terms and conditions, which will be attractive and cover undue risks without jeopardizing consumer interests.

The Government has also taken a pragmatic view that in the immediate future the public sector would have to play a dominant role in developing hydropower. Accordingly, a gross budgetary support of nearly Rs175 billion has been allocated to hydropower development, out of the total allocation of Rs250 billion for the power sector for the 10<sup>th</sup> Plan (2002–2007). This also amounts to a substantial increase compared to the allocation made in the 9<sup>th</sup> Plan (1997–2002), which was to the tune of Rs92 billion.

A number of hydropower corporations have also been established in the central sector and in the joint sector (Central and State). These include the NHPC, North-Eastern Electric Power Corporation (NEEPCO), Nathpa-Jhakri Power Corporation (NJPC) now Satluj Jal Vidyut Nigam Limited (SJVN) and Tehri Hydro Development Corporation (THDC). Besides, the National Thermal Power Corporation (NTPC) has been authorized to take up hydro projects. Narmada Hydro Development Corporation (NHDC), a joint venture of the National Hydroelectric Power Corporation (NHPC) and the Government of Madhya Pradesh, has been constituted to implement Indira Sagar (1,000 MW) and Omkareshwar (560 MW) projects.

For execution of the projects as per schedule, a stronger monitoring mechanism for construction/execution of the hydro projects has been put in place by MOP/CEA to realize the target set for the 10<sup>th</sup> Plan. CEA nodal officers regularly visit project sites so as to identify problem areas and also give regular feedback on the progress made and corrective steps to be taken to streamline the execution of the projects.

Efforts are also being made to facilitate long-term financing of loans. For example, the Power Finance Corporation (PFC) is now giving loans with a maximum repayment period of 20 years with a moratorium of 6 months after commissioning of projects.<sup>18</sup> Interest during construction is also eligible for financing. There is a provision for refinancing after commissioning of the project. As per prevailing norms, 80% of the project cost can be debt financed for central sector projects and state sector projects in those states where reforms have been undertaken. For other states and IPPs up to 70% of the project cost can be financed. Key considerations of PFC for financing hydropower projects are projected tariff, quality of DPR, purchaser's financial health, power purchase agreement and payment security mechanism.

Project developers can also play a pro-active role in minimizing these barriers. A good communication strategy with the public and especially the project-affected people is also important.

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<sup>18</sup> Discussions with PFC.

A recent publication of the Indian National Hydropower Association (INHA) has chronicled some of the initiatives taken by NHPC in some of their projects.<sup>19</sup> These include ethnographic studies before formulating R&R plans, direct communication with people, provision of schools, health care centers, planting of trees, adoption of biological, engineering and bio-engineering measures to check soil erosion, etc. It also provides examples of how adverse impact or damage to any monument or structure were avoided through proper planning and design.

Recognizing the concern of the developers of the impact of the free power provision on tariffs, MOP had mooted a proposal to stagger the 12% free power keeping it low in the initial years and raising it gradually to 12% in order to keep the initial tariff viable (back-ending of tariff) during the loan repayment period. The matter is taken up with the state governments on a case-to-case basis. The Government of Jammu and Kashmir has agreed to forego its share of 12% free power, from the Baglihar Hydroelectric Project and the Government of Madhya Pradesh has also agreed to forego its free power share in the Omkareshwar Project.

The strategies being adopted in Uttaranchal, Himachal Pradesh, Sikkim and NER are given in Appendixes 6–9.

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<sup>19</sup> 'Reckoning the reality' INHA, February 2005.