

Financing of Power Projects¹

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Abstract

The paper highlights various issues related to financing of power projects. The paper gives brief description of current scenario; power generation targets; problems and prospects; financing of power projects; government initiatives; private sector participation and suggestions to improve the power scene in the country.

Section I: Introduction

Power is a vital input needed to fuel the engine of economic growth and to fulfill the basic needs of the entire population of a country. Energy differentiates a least developed or developing economy from a developed economy. Empirical evidence suggests that lack of energy can whittle down the pace of economic development while its abundance can stimulate the development. Data show that on an average an American consumes approximately 40 percent more energy than an Indian does. This stark gap in consumption levels may safely be attributed to the government's failure to maintain an appropriate ratio of Hydel and Thermal power and not properly harnessing hydro power which is possible only through the construction of large river valley projects. Apart from storing water, river valley projects not only produce electricity but also ensure cleanliness of the air in the process.

Power is the most critical input for agricultural, industrial production, IT & telecommunications and raising the quality of life of people. The Government's own statements amply confirm that it is well aware that the "marginal productivity" of power in the rest of the economy is far greater than the cost of power. (Somewhat cynically, for the xenophiles, this would amply justify the foreign IPP's even if they are more expensive. And, it does because, even IPPs set up entirely with foreign capital and all equipment sourced from outside, is better than power cuts and shortages). This means that power development ought to be the top most economic priority of the State. It also means that there is an opportunity for deficit financing of power projects, so that the required additions to capacity to match demand need not suffer for want of resources. Only a dogmatic monetarist position would insist on identifying the finances for power development with required additions to capacity to match demand need not suffer for want of resources. Only a dogmatic monetarist position would insist on identifying the finances for power development with required savings for the economy as a whole. Deficit financing in the case of power (if tight implementation schedules can be adhered to) need to be inflationary given the extremely high marginal product of power in industry and agriculture. With the extra power availability, if output can go up significantly, then the resources would be self-financed for the economy as a whole, via increased income generation. In other words, of the twin consideration (or near term objectives) in structural adjustment-expenditure switching and expenditure reduction-the right policy would be major expenditure switching in an economy where the productive sector is fundamentally constrained by a critical supply side bottleneck (here power), and where removal of the bottleneck does not involve long gestation. Overall expenditure reduction has to be tempered to accommodate the expenditure increase in overcoming the critical bottleneck.

Huge amount of investment that runs into crores of rupees is required in the power sector. Besides capital expenditure in the form of plant and equipment, a major chunk of the money is spent on fuel that is the most important raw material (in case of Thermal). Repairs and maintenance and administrative and other overheads also occupy a substantial share in the total expenditure.

Section II: Funds Requirements of the Power Sector in India:

There is a wide gap between demand and supply of power in the country. Serious efforts are required to finance projects to meet this wide gap. There has also been difference between public generation targets and achievements, which has seen many ups and downs. The shortfall in the seventh plan was 4 percent which was also the lowest. But in the very next plan i.e. eighth plan the shortfall shot up dramatically.

Table I: Power generation targets and achievements

	<i>Addition to</i>		<i>(in Mw)</i>
	<i>Installed capacity</i>		<i>Percentage</i>
	<i>Target</i>	<i>Achievement</i>	<i>shortfall</i>
First plan	1,300	1,100	15
Second Plan	3,500	2,300	36
Third plan	7,000	4,500	36
Fourth Plan	9,300	4,600	50
Sixth Plan	19,670	14,230	28
Seventh Plan	22,250	21,500	4
Eighth Plan	30,540	16,420	46

As per the estimates of Planning Commission, the total capacity addition in Eighth plan was only around 16,420 Mw. The main reason for shortfall was Government's withdrawal of budgetary support for power projects in the anticipation that Independent Power Projects (IPP) would come up with the required investment. In fact, a large number of projects were selected by the Government and several "Memorandum of Understanding" (MOUs) were signed for power generation. Ironically State governments have not done much besides showing interest in such projects. A lot needs to be done on issues relating to environmental clearance, availability of land etc.

The working group report on power envisages a capacity addition of 57,730 Mw during the Ninth Plan. The Planning commission, on the other hand, estimated that the installed capacity requirement in the year 2002 would be 1,31,730 Mw. The installed generation capacity (as on March 1997) was 84,910 Mw. This way capacity addition required during the Ninth Plan (1997-2002) would be 46,820 Mw. In addition the Planning Commission considered all sanctioned, ongoing and pipeline projects and arrived at the conclusion that a capacity addition of the order of about 40,250 Mw would be possible during the 9th Plan Period. The envisaged composition is:

Central : 11,910 Mw (29.5%) , State : 10,750 Mw (26.7%) , Private : 17,590 Mw (43.7%)

The whole exercise does not seem to be feasible on account of three reasons:

1. The state sector has neither the financial resources nor managerial capacity to add 10,750 Mw in five year period.
2. The capacity addition of 17.590 Mw by private sector is just impossible.

Given the Government's expectations of a high investment from private players, the prospects of capacity addition in the Ninth Plan look bleak looking at the past record of private investment. The private sector power policy was introduced in 1992 but it has failed to attract desirable level of investment.

Therefore, one of the major issues in the power sector is, “raising of funds for carrying out the operations” to meet the demand & supply gap. The companies in the power sector finance their outlay through both the internal as well as external sources. They plough back own profits to finance their outlay. They also enter into agreements with various multilateral agencies for financial support. A look at the following table would give us the idea of the size and dimension of funds requirements in Indian Economy.

Table 5: Funds Requirement: Generation and T & D

Year	Capacity Addition (MW)	Generation	T&D	(Rs. Billion)
				Total
1996-97	7500	262.5	157.5	420.0
1997-98	8000	280.0	168.0	448.0
1998-99	8500	297.5	178.5	476.0
1999-00	9500	332.5	199.5	532.0
2000-01	10500	367.5	220.5	588.0
2001-02	11500	402.5	241.5	644.0
2002-03	12500	437.5	262.5	700.0
2003-04	13500	472.5	283.5	756.0
2004-05	14500	507.5	304.5	812.0
2005-06	15500	542.5	325.5	868.0
Total	111500	3902.5	2341.5	6244.0

Note: The calculation assumes a US \$ to Rupee conversion rate of Rs.35 and average price of \$ 1 million per MW of generation capacity added.

Source: India Infrastructure Report, Vol. III, 1996

Section III: Financing of Power Projects

One estimate shows that investment in the range of Rs.500-600 billion annually is needed in the power sector by the end of the Ninth plan. Power Finance Corporation has given thrust on greater financial assistance. Despite its growth PFC could finance only Rs.33.4 billion in 1998-1999. It plans to raise this level to Rs.50 billion by the end of year 2000. The difference in need and availability of finance is obviously huge. Clearly a lot more is needed to bridge this gap.

Considering the fund crunch being faced by State Electricity Boards, private promoters should turn to Indian and foreign financial institutions. Joint ventures should be formed with 100 percent equity holdings shared by both the Indian and foreign

promoters. The equity requirement is 11 percent of the project cost as required by the Government of India. In September, 1996 Government made it mandatory that schemes with expenditure above Rs.1.0 billion will need to seek techno-economic clearance of the central electricity authority. However some shift in this policy was introduced later on and the limit was raised to Rs.2.5 billion in case of memorandum of understanding route. In case of projects through competitive bidding the existing limit of Rs. 1.0 billion for CEA for CEA techno economic remained intact.

In case of foreign loan it would be required that supplier's credit is guaranteed by Export Credit Agencies from the country of export. These export Credit Agencies would, in turn, have to seek guarantee from Financial Institutions and Indian banks since foreign banks and credit institutions continue to be unwilling to take the credit risk in view of the weak financial condition of State Electricity Boards. The promoters must take into consideration that the loan provided by the ECAs will be supported by the IFIs. The fee for this service generally varies between 1.5 percent to 3 percent of principal and future interest. This fee rate is generally arrived at on the basis of discussions between such institutions as ICICI, PFC and IDBI. Apart from interest costs and guarantee fees, other costs of financing are the lenders upfront fee, a fee for amount committed but remained unused, third party assessment and closing fees. In most cases upfront and unused fees are calculated on the committed amount and not on the total drawn amount. Third party costs include legal and consultancy fees.

In case of private participation in this sector it is important that proper infrastructure is in place. Creation of infrastructure has become very important because money invested by private player attract high interest. The approach of private promoter in financing such projects should be somewhat different. They should note that the development of hydro-power projects should not be done out of the sole intention of making money, while making money cannot be altogether ruled out. Inordinate delays in the execution of such projects caused by promoter's inability to secure the investment money will not help the promoters and they may have to face the wrath of those who support the project. The promoters need to make sure the project is environmentally sound, safe and without controversies. They must ensure that there is little submergence of land, little or no relocation of the residents and so forth. Though these issues are not directly related to finance, if ignored they will drastically tell upon the finances of promoters.

1. Indian Financial Markets:

i. Equity finance : Government policy allows a debt equity ratio of 4:1, however, the lending institutions advocate a Debt Equity ratio closer to 7:3 as a prudent measure for lending. Specialised infrastructure and mutual funds have come up to bridge the equity gap in mega projects such as Global Power investment of GE Caps, the AIG Asian Infrastructure Fund, the Asian Infrastructure Fund of Peregrine Capital Ltd. and ICICI-Power promoted by ICICI Mutual Fund.

ii. Debt Finance : In raising debt for financing power projects, the cost of funds should be the lowest so that the ultimate cost of electricity will be cheaper for the consumers. The decision of the project promoter to go for equity or debt finance depends

upon various factors such as Govt. guidelines for power projects, incentives available and return on equity as also the cost of debt vis-a-vis equity.

iii.. Domestic Capital Market : Debentures (convertible/ non-convertible)/bonds are issued by Central/ State Govt. PSUs and public/ private Ltd. companies to augment the resources for power sector in the capital market. Presently, internal rates are deregulated and credit rating is mandatory if the maturity of instrument exceeds 18 months. NCDs with option of buyback, debentures with equity warrants, floating rate bonds and deep discount bonds are some of the innovative instruments offered in the market.

iv. Indian Financial Institutions: The area of project financing in the Indian context, is mainly limited to Indian term lending institutions like IDBI, IFCI, ICICI, SCICI, SIDBI, UTI, PFC, LIC and GIC. In addition, a large number of state level institutions, finance projects of smaller size commercial banks also participate in term loans to a limited extent, besides meeting the working capital requirements. Disbursements made by PFC are to state utilities like SEBs/SGCs, whereas disbursements by other FIs were mainly to private power projects. As no individual Financial Institution can feed to power sector singly because of huge capital requirements and long gestation period of power sector. The concept of loan syndication amongst the FIs is gaining momentum. This also helps in sharing of risk among the FIs apart from saving on efforts and cost because of appraisal done by the lead institution.

2 International Financial Markets

Due to limited domestic finance available for power projects, the need to tap international markets becomes inevitable which is characterized by long tenure of maturities and availability of various modes of finances.

i. Multilateral Institutions : Institutions like World Bank, IFC- Washington, ADB, and Commonwealth Development Corporation (CDC) have traditionally been financing infrastructure in developing countries. The financing comes with restrictive covenants, affordable cost, long tenure (of usually more than 7 years) and in an assured manner. The co-financing facility extended by some of the multilateral institutions is gaining popularity. In many of these loans, sovereign guarantee is required.

ii. Export Credit Agencies (ECA) : ECAs are important sources of bilateral funding. Credit is provided by ECAs such as, US Exim bank, Exim Japan, OPIC- USA, ECGD- UK etc. ECAs have a long history of providing finance for all types of power generating equipments. There are certain limitations in ECA financing like exposure limit, exchange risk transfer to IPP, guarantee requirements and cost of insurance etc. Since the mid-eighties, NTPC, and the NHPC have been pushed into purchases from foreign equipment suppliers, as the Government on grounds of political expediency has been going in for the bilateral credit option, which has hurt domestic producers of electrical power generating equipment, since bilateral credit is inevitably tied. Even with such projects, since the operations are carried out by an efficient Indian company, there are no outflows on the operations cost of power.

iii External Commercial Borrowing (ECB) : These include Yankee Bonds, Samurai Bonds, Dragon Bonds, Euro Currency syndicated loan, UD 144A Private placement, Global Registered Notes (GRNs), Global Bonds, Medium Term note programme (MTNs)

iv. Syndicated Loans : The special features of syndicated loans are that they are available for medium to longer period; specific to the requirements of the borrowers to suit their projects, and availability of floating rate of interest. Most of the investors are Asian/ European banks, FIs, Insurance Companies and pension funds.

v. Private placement: Rule 144A allows for private placement of bet to financial institutions known as QIB, without the kind of stringent disclosure requirements needed for equity issues. Long tenure of bonds and less restrictive covenants make this proposition conducive for financing power projects.

vi. Global Depository Receipts (GDRs) : GDRs present an attractive avenue of funds for the Indian Companies. Indian Companies can collect a large volume of funds in foreign currency through Euro issues. GDRs are usually listed in Luxembourg and traded in London in over the counter market or among a restricted group such as qualified institutional buyers (QIBs) in the USA. The GDRs do not have voting rights, so there is no fear of loss of management control.

3. Financing through Internal Resources:

One of the most important source of finance is Internal Resource generated through the projects own operations. There are two aspects of this issue. One the funds already invested but not yielding results need to be put to use. Second, the projects should be made to be cost effective so that projects are able to generate enough resources from within the project.

We need to use the funds stuck up in various projects. For instance, presently Rs.80,000 crores is stuck up in various hydel projects which have been invested in the past. This massive amount has become non-performing asset and the nation is loosing because these projects for one reason or another are not being allowed to be completed.

Hydro-Electric power is cheaper and is based on renewable natural resources of energy It offers a large number of advantages. For instance

1. It is the most economic source of power.
2. Hydropower production does not pollute environment.
3. It is based on renewable source of energy unlike thermal which is based on non-renewable sources of energy. Oil, Coal, Gas Resource which can be used for producing electricity are getting scarcer day by day and involve high cost and put strain on foreign exchange. By placing greater reliance on hydro power these constraints can be overcome.

4. It also helps in management and regulation of water resources. Shortage of water would create serious problems for mankind if not attended to immediately.

One of the charges leveled against hydropower is that it has long gestation period compared to thermal projects and, in turn, increases the cost of the project. Environmentalists have also raised live and cry in the past against hydel projects. Power economy committee after examining this point concluded that if hydro project is thoroughly examined and designed before implementation, the actual period of construction is nearly the same as that of a thermal project. This is why Power Commission in 1962 and Energy Survey of India Committee in 1965 suggested greater reliance on hydro projects. After getting off to an impressive start in the First and the second plans hydro-electric projects started witnessing slackened growth. The trend was unhealthy and there was a need to reverse this. Power Economy Committee (1971) stated, "Under the existing conditions in the country, the hydel schemes constitute the most economic source of electric production to control and reduce the cost at energy generation and supply in the country, to enable full utilization of generating facilities already built up and to ensure that the limited capital allocations to the power supply industry go the farthest in meeting the country's estimated deficit, the bulk of new generating capacity to be added during the 5th and 6th plans should be derived from hydro sources".

Despite such clear advantages only one-fifth of hydro power has been harnessed in the country so far. We need to build up a shelf of well-investigated projects. The operational cost is low, maintenance requirements minimal and hydel power is an excellent arrangement for peaking support. That is why a continuing program of hydel investigation and execution of project is imperative.

At present only 20 percent of the power generated in the economy is from the hydel sources. In the year 1950-51 the total installed capacity of hydro-power was 560 Mw which went up to 21,140 Mw by 1996-97. In spite of this jump it dropped to 25 percent from 33 percent in relative terms. Hydro-electric power has the potential to contribute a major part. No doubt progress has been made so far as construction of river valley projects is concerned, but still much more needs to be done in this field. A cursory glance at the share of hydel power in selected countries reveals that India still lags far behind other countries.

<i>Country</i>	<i>Percentage share</i>
Norway	99.4
Brazil	92.7
New Zealand	74.1
Austria	69.3
Canada	68.4
Sweden	64.1
India	20.1

River Valley projects which go a long way in storage of precious water and generation of electricity require high initial capital. This can certainly be regarded as a major deterrent in putting up large river valley projects in a capital scarce country like

India. But a closer look suggests that there are several stumbling blocks which play a major role in the retarded growth of river valley projects.

A typical river valley project can be used in irrigation and generation of electricity. At times, it can play a significant role in reducing the impact of floods or draughts. India suffers heavily from both the floods and draughts. India's agriculture largely depends on rains. Hydro projects may help India in reducing India's agriculture on rains as hydro projects would help in developing appropriate irrigation systems by proper water resource management.

Such projects offering so many facilities have become a centre of controversy in India on account of concerns raised by certain sections of society. The concerns of environmentalists are not altogether unfounded but these concerns are one sided and do not hold a holistic approach towards the nation; welfare of its people and livestock. Actually all projects - thermal hydro or manufacturing have negative impact on environment. Even the very existence of a human being adversely affects the environment. Does it mean that we should do away with the man kind? So, why single out large river valley hydro projects, for any negative effect on environment.

The share of hydro generation in total generation has been declining. The hydro thermal mix stands at around 20:80 against the prescribed 40:60 ratio. The government has been making some efforts to reverse the trend but unable to take effective steps in this direction. The Government of India has created organizations to promote hydel projects. Even NTPC was granted permission to take up the execution of hydel projects. The sector was opened up for private developers also. During 1998-99, Government announced a policy of hydro power development with a view to exploiting the vast hydro power potential available in the country at a faster rate. During 1999-2000, guidelines were issued simplifying the procedure for techno-economic clearance by the Central Electricity Authority (CEA). Emphasis was laid on the timely completion of on-going projects. The policy envisages a hydel capacity addition of 4095 MW in the central sector. However, due to several political, geological, environmental constraints the overall scenario in the hydel power appears to be far from satisfactory.

There has been a lot of hue and cry against large hydel projects. Self appointed upholders of human rights and environment protection have made a lot of noise every time there is talk of large hydel projects. It is in this background that hydel-thermal ratio fell sharply. Hydel capacities which moved up at a good pace during mid-sixties, virtually collapsed in eighties and nineties. Large hydel plants are not only cheaper in terms of unit cost of power but also have potential to improve the Plant Load Factor (PLF) and operational efficiency of thermal plants of the same system, arising out of supply side synergies. States with high hydel capacities also show higher PLF for their thermal units. This shows the positive synergistic effect of hydel capacity. The cost of power for SEBs is determined by PLF and the hydel thermal ratio. A good hydel share in generation mix would go a long way in stabilizing and reducing the cost of power. Yet investments in hydel capacities have nose-dived. The reason for dwindling investments in hydel projects are many.

The Central Government is yet to get its act together. When it comes to allocating resources the Central Government ends up doing a poor job. The Government has been unable to concentrate resources for economic benefit. Regional interests lead to inadequate allocation of resources to several critical projects. This tendency proves detrimental to long gestation period projects. In spite of the inefficiency large scale corruption and the cost of delay, large hydel projects are still cheaper than small projects. A standpoint that accepts the actual cost as the basis for evaluation of costs and benefits is entirely wrong. Strong costs (which are not the original estimates but the same blown up for inflation, and for the underestimating inherent in government projects) ought to be the basis for the strategic choice between large versus small hydel projects, or between hydel, thermal and gas. Poor implementation, graft and spreading resources thinly are some of the problems that need to be addressed urgently.

It is generally observed that Hydel power projects are particularly prone to cost overruns due to long gestation time. The delays and cost overrun take place on account of state's tendency to spread resources thinly to accommodate some projects than it can bear. Concentration of resources for infrastructural activities with compression in construction period will result in large benefits. Other factors contributing to delay for power projects are : fund constraints, environmental clearance, land acquisition for compensatory forestation and other government clearances. Despite so much of formality that a hydel project is required to pass through, there is no letup to the degradation of forests in India, since the cause of such degradation lies in the corrupt and unscientific working of the concerned departments. In most of the cases environmental clearance became the biggest stumbling block in public sector project clearance. In this respect we should take a lesson from China where "high-spread" growth could be possible due to compression in construction time.

Many of the problems in the completion of Hydel power and irrigation projects arise on account of vested interests of self-appointed guardians of environment in India. Because of the vociferous and misplaced protests of such groups Narmada project suffered a lot which is bound to result in costs to the project going up. The Tehri Dam in U.P. has been stopped several times, and it is doubtful if it would come through at all. All the expert committees that examined the seismic question have confirmed the basic soundness of the design and the ample safety factor that has been built into the design.

In Kerala the development of hydro-power has almost come to a standstill due to the strong pressure of environmental lobby. In 1989-90, the Kerala government identified the total exploitable hydro potential of the state to be 5120 Mw including the then existing schemes of 1476.5 Mw. As much as 1025 Mw of the potential having the lowest costs had to be abandoned because of the pressure of the environment lobby. A further 700 Mw worth of schemes, again with low cost, were indefinitely postponed due to difficulty of arriving at inter-state agreements on the use of water; and a further 426.5 Mw worth of schemes were awaiting forest clearance and were unlikely to materialize. This left only 1231 Mw of exploitable schemes with higher cost/Mw than those given up. Some of these schemes have since then been dropped due to pressure from the environmental lobby. Thus most of the cheapest power projects are not likely to come up. The next choice is to embark on small, mini, and micro schemes which in the absence of storage

reservoirs will only function as seasonal stations and for that reason generation costs are now high. This situation of power in Kerala is deplorable in the background of the fact that Kerala was a power surplus state in the seventies. The power scenario in Kerala has significantly worsened with massive power cuts, very poor power quality, frequent interruptions, large voltage variations, low frequency, overloading of particular distribution lines. Storage based hydel systems are a must if the peak demand has to be met. As peak demand rises faster than base demand, and irrigation demands increase, large investments in hydel capacity are justified. Many of the early reservoirs on the western Ghats could be better utilized today as irrigation projects. They could still be utilized with investments in pumped storage, to provide peaking power, without a net drawl of water except that which would have over flown anyway during the monsoon.

If the rest of the country follows in the footsteps of Kerala, large hydro-electric potential in the country is likely to remain untapped. To exploit large hydel resources available in India, constructive and rational environmental debate should take place and new institutional mechanisms should be created to quickly settle the disputes among the states. Environmentalists who justify with a host of reasons must also understand that India desperately needs power & water. Power is required for the personal consumption and development of various sectors of the economy. While water resource management if not handled carefully now would create serious problems of the economy agriculture and pose a threat for the very survival of humanity in the country. If the present State continued towards water resource management, there would be acute shortage of water in this country. Shortage of water itself be the greatest impediments to the environmental and ecological balance of the country.

Section IV: Government Initiatives

In order to give fillip to hydel power generation the Government initiated policy measures in 1990. The policy change came in the wake of the financial crunch that this sector was facing. To successfully overcome this financial bottleneck the first step taken was to create power development fund. In order to survey and investigate new hydropower projects, Government proposed a cess at 10 paise per kwh of electricity consumed. The scheme is expected to generate approximately Rs.30 billion annually and would be credited to the "National Development Fund".

Lately, the Government realized the importance of generating adequate internal resources. This is a vital component in repaying loan and providing a reasonable return on investment. Plans are to seek a solution to the issue of computing the competition cost in the face of geological uncertainties and surprises. The ministry has also realized the need to allow a premium on the sale rate of hydro power generation during peak hour.

Keeping in view the constraints that Government is facing it is important that private parties are attracted to invest in long gestation infrastructure projects. The ministry has urged private parties to form joint ventures with PSUs and SEB. To make this plan viable there would be a power trading corporation which will buy the power generated by those joint ventures. The impact of such policy measures till date suggests that private promoters are hesitating in entering into joint ventures. One of the reasons recognized for this hesitation is the financial bankruptcies of state electricity boards. Notwithstanding

the policy initiatives taken in August 1998, there are grey areas which need to be properly addressed. Government's assurance for delay free solutions in areas like the Government support for land acquisition and solutions to interstate projects seems highly unconvincing.

Incentives for Investors

- * All private companies can maintain a debt equity ratio of 4:1. They can raise a minimum of 20 percent of total outlay through public issues. Promoter's contribution should be at least 11 percent of the total outlay. Not more than 40 percent of the total outlay can come from the Indian public sector financial institutions.
- * For both licensees and generating companies, up to 100 percent foreign equity participation can be permitted for projects set by foreign private investors. Import of equipment for power projects will also be permitted in cases where foreign supplies or agencies extend concessional credit. Generating companies can sell power on the basis of a suitably structured two-part tariff.
- * Generally companies can sell power on the basis of a suitably structural two-part tariff.
- * The specific incentives for licensees are:
 - Licenses of a larger duration of 30 years in the first instance and subsequent renewals of 20 years, instead of 20 and 10 years at present.
 - Higher rate of return of 5 percent in place of the previous 2 percent above the RBI rate.
 - Capitalization of interest during construction at actual cost as against 1 percent over the RBI rate at present and
 - Special appropriation to meet debt redemption obligation.
- * A guaranteed return of 16 percent - foreign investors to get it in dollars. Till 1996 the Central Government provided counter guarantee against the commitment of the state governments on payments for energy supplies.
- * A 5 year tax holiday for new power projects.

The Status of present private power policy

- * The Government of India received 245 proposals from private companies for capacity addition of 93,660 Mw with a total investment of Rs. 3,39,700 crores. Out of this there were 194 foreign proposals with an investment of over \$75 billion (Rs. 2,63,000 crores) and for generation of about 75,000 Mw of installed capacity.
- * 19 projects (10,850 Mw) accorded techno-economic clearance.
- * 79 proposals (37,930 Mw) accorded clearance in principle.
- * 5 proposals under examination.

- * 14 power projects under construction for a total capacity of about 3,500 Mw.
- * 22 project proposals (5,375 Mw) have been approved by Indian Financial Institutions and another 42 proposals are under examination.

The above details make it clear that during the Ninth Plan only about 3,500 Mw would be contributed by the private sector. In order to achieve the target of 17,590 Mw of capacity addition the Government will have to provide access to institutional funds. The present limit on lending by IFI to any infrastructural sector including power should be removed, as large funds are needed and sufficient budgetary allocation is not available. One of the pitfalls of this new policy is that private investments are being offered for setting up thermal projects in regions where the need of the hour is for hydro generation.

The main reason for slowdown in capacity addition is shortage of fund, which in turn is because these sectors do not generate adequate surplus. As public sector enterprises, they can not charge appropriate user fees. Electricity is provided to agricultural users at highly subsidized rates. The agriculture lobby was able to extract this subsidy since initially electricity demand by agriculture was a small part of the total demand. It was 3.9 percent in 1950-51, 6% in 1960-61 and has grown to 29.8% in 1993-94. Today the subsidy for agricultural power given by all SEBs add up to Rs.7000 crores per day, i.e. if farmers were to be charged only the average cost of power, the SEBs would get Rs.7000 crores more per year. When leveraged into capital markets that would become Rs.35,000 crores per year, enough to install 9,000 Mw per year. Even without any inflow of private capital, power shortages would disappear. In India expecting such a scenario is just impossible, at least at the moment, as political class cannot think of enraging the farmers.

Private investment in power projects will not flow unless the Government changes decision-making structure, sensitize state governments to handle cases of private investment, both Indian and Foreign and sorted out pricing contractual issues. The rate of profit that a foreign investor expects is at least 30 percent. Since foreign investor is his own buyer of equipment, there is evidence of significant padding of costs, which would make the actual return on investment much higher. In fact, no investment is possible where the productivity gains do not exceed the return on the capital invested. That, obviously, applies under competitive conditions. Payments for such investments can be made only by squeezing the savings in the rest of the Indian economy. The post 1993 policies do not purport to develop infrastructure through concessional long term loans/credits from the World Bank/IDA, the focus is on FDI for infrastructure development. We should be acutely aware that foreign investor is interested in making profits, he is not doing charity.

Section V: Policy Suggestions

In view of the ever increasing need for large river projects it is necessary to shape public opinion and build public awareness. The creation of local level institution will also prove effective in this direction. The need of the hour is that we come out of parochial mentality. Such transformation in mindset will lead people to become user-friendly and agent of change. Local entities should make endeavor to ensure public participation. In fact there should be a concerted effort for change in attitude. This attitudinal change can be possible only through dissemination of information. Government's role should be

limited to technological, training and financial aspects. In order to reduce the above mentioned adverse impacts it is necessary that water users be trained in the matters of water conservation, economic use of water, quality of water, cropping patterns and agronomic practices. In such training programs active participation of farmers should be ensured. One way to genuinely quell the hue and cry over large river valley projects is to integrate the environment concerns at the project planning stage. There should be integrated water resource development schemes including storage schemes, lift irrigation schemes, ground water development etc. rather than segmental development. The most glaring example of the success of large river valley projects can be found in the states of Panjab and Haryana where per capita income is significantly high. In spite of such adverse impact, it also remains a fact that hydropower projects on river valley are most environment friendly as they do not contribute to air pollution causing green house effect which is a real threat to global environment. Painstaking decision making is required to conceive a scientifically accurate, economically viable and environmentally sound project. To minimize impacts on environment hydropower plants should be installed on irrigation canals, existing plants should be updated within inbuilt margins and components should be replaced after exploring latest technologies. It is a fact that environment cannot be protected unless basic needs of food; water and energy are met by accelerating improvement of irrigation, water supply, hydroelectric and multipurpose river valley projects.

In a country like India it is very important that water resources be utilized efficiently and effectively. For such an effective utilization of water resources construction of river valley projects is of paramount importance. And river valley can be reality only when there is adequate finance. In a river valley project the prospects from hydropower generation seems most lucrative. That is why investment decisions are largely guided by hydroelectricity. The introduction of new power policy and the vertical splitting up of the business of generation, transmission and distribution signify that the government is ready to provide fresh impetus to river valley projects. In the bygone era everything from conception to operation of the project was guided by Government. In the new regime the government is ready to rearrange everything so that necessary finance could be put in place for the construction and running of river valley projects. The need of the hour is to move into an era of financially sound projects.

- a) No doubt, privatization is one of the prime way out. However, privatizing the entire power apparatus in one go would entail a lot of acrimony and bottlenecks. Private players would not accept the present infrastructure with its present inefficient workforce. On the other hand, workers would not accept the any sort of retrenchment or wholesale Voluntary Retirement Scheme (VRS). Again selling the assets to private players at lower price would not make a good economic sense. For meaningful privatization, government would have to accept that it has to push through a detailed legislation specifying the method for privatization, covering such aspects as preparation of units, corporation, valuation, pricing, concessions to employees etc.
- b) Taming the unbridled SEBs is the next important issue. In this regard, the government should increase the levels of budgetary contributions and relate the same to

performance. Centre should base its contributions on the savings of the SEBs rather than other populist criteria.

- c) In order to bring about a turnaround in this sector accounting system needs to be changed to enterprise accounting i.e. cost and management accounting. Only then can we highlight the cost of various inefficiencies and bottlenecks.
- d) In case of hydel power development we need to get rid of public interest litigation on account of reasons discussed in this paper. But dealing with self-appointed protectors of environment who play with emotion is really a Herculean task. The only way rationalists can counter the rhetoric of so-called intelligentsia is to impress upon the government to share information with public.
- e) Clearing the legal ground for large scale interstate movement of power and of interstate investments in power generation by SEBs becomes vital.
- f) Unless Government initiates process to price canal and major irrigation water at reasonable rates, the problem of very low prices for the agricultural sector can hardly be handled.
- g) In spite of opening up of hydel power sector for private player, private investments have not poured in. The need of the hour is to introduce a process of radical institutional transformation.
- h) Incomplete projects should be completed as early as possible resolving the disputes.
- i) Tariff for secondary energy should be based on 10 percent return on equity as provided in a notification based on average secondary generation. This should not be bound by any limit on payment for secondary energy in a year.
- j) Availability of incentives for plant capacity should be increased from 0.7 percent to 1 percent, or alternatively peak tariff concept could be introduced. This should be admissible above normative level of 90 percent at present.
- k) Exemption of tax on equity should be extended for a minimum period of 10 years.
- l) The private- public initiative need to be promoted through government initiative..

References

- Agarwal, Aman, "A New Approach & Model for Weather Derivative Instrument based on Water Table for Floods, Droughts and Rainfall" prepared for *Financial Sector Development Department, The World Bank, Washington DC, USA; Finance India XVI No 3, September 2002*.INDIA
- Agarwal, J. D. and Aman Agarwal "Globalization and International Capital Flows", *ANANYA,Journal of National Institute of Financial Management (Invited Paper), 2004, INDIA* (forthcoming issue)
- Agarwal, J. D. and Aman Agarwal "Liberalization of Capital Flows, Banking System & Trade: Focus on Crisis Situations"; *Invited paper for INTERNATIONAL REVIEW OF COMPARATIVE PUBLIC POLICY* titled "International Financial Systems and Stock Volatility" *Volume 13, pages 151-212.*
- Agarwal, J. D., Aman Agarwal and Yamini Agarwal "Financing for Growth through Self-Assessment Governance and Total Quality Growth Model"; *LAHORE JOURNAL OF ECONOMICS, June 2004, PAKISTAN.* (forthcoming issue)
- Agarwal, J.D., Financial Decisions for Hydro Projects and Environmental Issues, in Radhey Shyam Goel, Environmental Impacts Assessment of Water Resources Projects, Concerns, Policy issues, Perceptions and Scientific Analysis, (Ed), Oxford & IBH Publishing Co. Pvt Ltd. pp.203-216.
- Agarwal, J.D., Readings in Financial Management, IIF Publication.1994
- Agarwal, J.D. and Charu Varmani, "Financing Strategies for Hydropower & River Valley Projects", published in Goel, R.S. & R.N. Srivastava, op. cit.
- Agarwal, Manju, "International Finance", IIF Publication, 1994
- CIME, "India's Energy Sector", CIME July 1995.
- Economic Survey, 2002-03, Government of India.
- Goel, R.S. and R N Srivastava, "Hydro Power & River Valley Development", Oxford & IBH Publishing, 1999.
- Government of Kerala, "Eighth Five Year Plan : Report of the Task Force on Power Generation — Hydro Electric Project, State Planning Board, May, Trivandrum, 1989.
- Mohile, A.D., River Valley Development — A Comprehensive Approach in Goel, R.S. & R.N. Srivastava op. cit.
- Paranjpe, Vijay, "High Dams on the Normada: A Holistic Analysis of the River Valley projects", Indian National Trust for Art and Cultural Heritage, 1990.
- Prasad, Kanta, Analysis of Socio-Economic and Environmental Impacts of River Valley, in Goel, R.S. & R.N. Srivastava op.cit.
- Raghuram G.; Rekha Jain; Sidharth Sinha; Prem Pangotra and Sebastian Morris, "Infrastructure Development and Financing", MacMillian India Ltd.,