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**STANDING COMMITTEE  
ON ENERGY  
(1995-96)**

**TENTH LOK SABHA**

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**NEW POLICY INITIATIVES IN POWER SECTOR—  
STATUS OF IMPLEMENTATION AND THEIR  
IMPACT ON THE ECONOMY**

**MINISTRY OF POWER**

**TWENTY-SIXTH REPORT**



**LOK SABHA SECRETARIAT  
NEW DELHI**

*May, 1995/Jyaishta, 1917 (Saka)*

# TWENTY-SIXTH REPORT

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(TENTH LOK SABHA)

NEW POLICY INITIATIVES IN POWER SECTOR—STATUS  
OF IMPLEMENTATION AND THEIR IMPACT  
ON THE ECONOMY

MINISTRY OF POWER

*Presented to Lok Sabha on 31 May, 1995*

*Laid in Rajya Sabha on 31 May, 1995*



LOK SABHA SECRETARIAT  
NEW DELHI

*May, 1995/Jyaistha, 1917 (Saka)*

**CE No. 040**

*Price : Rs. 52.00*

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Published under Rule 382 of the Rules of Procedure and Conduct of Business in Lok Sabha (Seventh Edition) and Printed by M/s. Jainco Art India, 1/21, Sarvapriya Vihar, New Delhi-110016.

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COMPOSITION OF STANDING COMMITTEE ON ENERGY  
(1995-96)

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9. Shri Dipankar Mukherjee
10. Smt. Ila Panda
11. Shri M. Rajasekara Murthy



## INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorised by the Committee (1995-96) to present the Report on their behalf, present this Twenty Sixth Report on the subject "New Policy Initiatives in Power Sector Status of implementation and their impact on the economy". The task of examining the subject "New Policy Initiatives in Power Sector Status of Implementation and their impact on the economy" and preparation of this Report was entrusted to a Sub-Committee of Standing Committee on Energy (1994-95).

2. The Sub-Committee held 20 sittings in all out of which 11 sittings were devoted to recording of personal hearing of experts and official witnesses and 9 sittings for in-house deliberations.

3. The Sub-Committee undertook on-the-spot study visits to Bombay, Madras, Neyveli and Hyderabad from 7.11.1994 to 12.11.1994 and to Calcutta, Farakka, Guwahati and Yazali in Arunachal Pradesh from 28.11.1994 to 3.12.1994. During the Study Tours, the Sub-Committee held informal discussions with representatives of State Governments/State Electricity Boards of Maharashtra, Tamil Nadu, Andhra Pradesh, West Bengal and Assam. The Sub-Committee also held informal discussions with representatives of Dabhol Power Company, Tata Electric Cos., Neyveli Lignite Corporation, Bharat Heavy Electricals Limited, National Thermal Power Corporation Ltd. and North-Eastern Electric Power Corporation during study tours. The Committee wish to express their thanks to the State Governments/State Electricity Boards and the other organisations for furnishing information desired by the Sub-Committee during the Study visits.

4. The Committee wish to express their thanks to the following experts/organisations for placing before the Sub-Committee requisite Material/Memorandum in connection with examination of the subject:

- (i) Bharat Heavy Electricals Limited
- (ii) Power Grid Corporation of India Limited.
- (iii) National Hydro-electric Power Corporation.
- (iv) National Thermal Power Corporation.
- (v) Federation of Indian Chambers of Commerce and Industry.
- (vi) Confederation of Indian Industry.

(viii)

- (vii) PHD Chambers of Commerce and Industry.
- (viii) Associated Chambers of Commerce and Industry.
- (ix) Council of Power Utilities, New Delhi.
- (x) Tata Energy Research Institute, New Delhi.
- (xi) Dr. N. Tata Rao, Former Chairman, Andhra Pradesh State Electricity Board.
- (xii) Dr. Arun Ghosh, Former Member, Planning Commission.
- (xiii) Shri K. Ashok Rao, President, The National Confederation of Officers Association of Central Public Sector Undertakings.
- (xiv) Shri N.S. Vasant, Former Chairman, Punjab Electricity Board.
- (xv) Shri E. Balanandan, M.P., President, Electricity Employees Federation of India.
- (xvi) Shri K.L. Puri, Former Chairman, Central Electricity Authority.
- (xvii) Shri A.K. Shah, Former Chairman, National Thermal Power Corporation.
- (xviii) Dr. Ashok Mitra, Member of Parliament & Economist.
- (xix) Shri A. Bardhan, President, All India Federation of Electricity Employees.
- (xx) Shri S.N. Ray, Former Chairman, Central Electricity Authority.
- (xxi) Ballarpur Industries.
- (xxii) Neyveli Lignite Corporation Limited.

5. The Committee also wish to thank in particular, the representatives of the Ministry of Power, the Ministry of Coal and the Ministry of Finance and following expert who appeared before the Sub-Committee for oral evidence/personal hearing and placed their considered views before it:

- (i) Power Grid Corporation of India Ltd.
- (ii) Bharat Heavy Electricals Ltd.
- (iii) Dr. Arun Ghosh, Former Member, Planning Commission.
- (iv) Dr. N. Tata Rao, Former Chairman, Andhra Pradesh State Electricity Board.

- (v) Shri K. Ashok Rao, President, National Confederation of Officers Associations of Central Public Undertakings.
- (vi) Confederation of Indian Industry.
- (vii) Central Electricity Authority.

6. The report was considered and approved by the Sub-Committee at its sitting held on 17th May, 1995 and adopted by the full Committee on 29th May, 1995.

7. The Committee place on record their appreciation for the work done by the Sub-Committee on Power (1994-95) of the Standing Committee on Energy.

NEW DELHI ;  
29th May, 1995  
8th Jyaistha, 1917 (Saka)

JASWANT SINGH,  
Chairman,  
Standing Committee on Energy.

**PART I**  
**PART A**

**I. PRIVATE POWER DEVELOPMENT POLICY**

**A. HISTORICAL BACKGROUND**

1.1 There has been phenomenal growth in India's Electricity sector since the First Plan. The total installed capacity of the country which was about 1362 MW in 1947 has now increased to a level of 81164 MW at the end of March, 1995 (provisional).

1.2 The figures regarding growth in installed capacity annual energy generation, Transmission system etc. are given in the following table:-

**Growth in Power Sector (utilities)**

Description	Unit	Position in 1950	Position in March 1995 (provisional)
Installed capacity	MW	1700	81164
Annual Energy Generation	MU	5000	351025
Transmission system			
a. 110/132 KV	CKt.Km	2700	91000*
b. 220 KV	CKt. Km.	Nil	74385
c. 400 KV	CKt. Km.	Nil	31834
Village Electrification	Nos.	3060	496492
Pumpsets Energised	Nos.	21,000	10619584
No. of Consumers	Million	1.5	85*
Per capita Consumption	Units (Kwh.)	15	314*

\* Estimated.

1.3 Even with the impressive growth in the installed capacity since independence, our present per capita electricity consumption is of the order of about .314 Kwh. per annum which is one of the lowest in the world and is in sharp contrast with the average consumption in the developed countries which is over 5,000 Kwh. per annum. Power

is the basic input for all growth and development as well as an essential ingredient for improving the standard of living of our people.

1.4 At the beginning of the Eighth Five Year Plan, the energy shortage was approximately 9% and peaking shortage about 20%. The Working Group of Planning Commission had recommended an addition of 48,000 MW in the Eighth Plan which was scaled down to 30,538 MW because of constraint of resources. It is estimated that even with this addition, the shortages in the terminal year of the Eighth Plan *i.e.* 1997 would be of the same order *i.e.* about 9% and 20% in energy and peaking requirement respectively. The situation in the first two years of the Plan has been worse than what was envisaged in the worst case scenario projected by the 14th Electric Power Survey. The actual shortages in the last two years *i.e.* 1992-93 and 1993-94 *vis-a-vis* the worst scenario projections of EPS as stated by the Ministry of Power are tabulated below:-

	EPS Shortages Projections as per worst scenario		Actual Shortages	
	Energy	Peak	Energy	Peak
1992-93	6.3%	18.9%	8.3%	20.5
1993-94	5.6%	18.5%	11.3%	31.9%

1.5 A mid-term Plan review indicates that the actual resource availability has been much lower than envisaged, and consequently the capacity addition in the Eighth Plan would be much lower than targeted. As per present indication, it may not be possible to exceed 20,000 MW. This would leave the energy and peaking shortages at the end of the Plan at a much higher level, with the situation being more acute in some regions.

1.6 The other options to augment availability of electricity are upgradation by renovation and modernisation of old plants demand side management and acquiring greater capability for optimal exchange of power between regions and energy conservation measures. All these options also require investments by SEBs, State/Central Power PSUs and even some user agencies.

1.7 It was therefore, imperative to encourage entry of private sector in the field of electricity generation and distribution by widening the scope of their participation by permitting setting up of private generating companies and liberalising the legal, financial and administrative environment in which licencees and generating

companies would operate to supplement the efforts of the State/Central PSUs and SEBs. This was done through necessary legislative amendments and introducing a policy complementary to these amendments.

## B. NEED FOR FORIEGN INVESTMENT

1.8 According to the Chairman, Assam State Electricity Board, foreign investment in the power sector is totally unnecessary and there is enough capital in the country which can be utilized in the power sector. India is stated to have one of the highest savings rates in the whole world and if the unaccounted savings are included, the country has perhaps the highest rate of savings in the World. Indian financial Institutions like the IDBI, have large funds at their disposal as may be seen from the fact that the foreign investors are resorting to long term credit through these institutions.

1.9 Asked to comment on this view, the Power Secretary, stated during evidence that it was not correct to say that we have sufficient resources within the country. The witness stated in this connection:—

“The installed capacity of power generation in the country rose from 1362 MW in 1947 to about 70,000 MW in 1992. The transmission lines increased from 10,000 to 40 lakh ckt. km and the number of villages electrified from 3,000 to about 4.90 lakhs (which constitutes 85% of the inhabited villages in the country during this period). The extension of infrastructure and the opening up of the economy has led to a rise of power demand in the country leading to shortages in all the regions of the country. Unless the power generation capacity goes up steeply, power shortages would hold up further development of the entire economy. The growth in power consumption during the 80s was around 8%. At a very conservative level, it can be anticipated at 9% during the 8th, 9th and 10th Plan period. If that is so, an additional capacity of 1.40 lakh MW will have to be created till 2007 over and above the 70,000 MW capacity at the end of the 7th Plan (1992).

The maximum of 21,000 MW capacity was added during the 7th Plan. In all other Plans, the rise in capacity both at the Central and State level was below this figure. Looking at the growth in demand, we first planned for more than 45,000 MW capacity addition during the 8th Plan. This was pruned down to 30,000 MW at the time when the Plan was approved. Currently, we visualise that the additional capacity created would be 19,000 MW

during the 8th Plan. Granting that the Government of India will be able to earmark sufficient funds for the public sector, the additional capacity added during the 9th and 10th Plans cannot exceed 20,000 MW during each Plan. If that is the scenario, the shortfall in the year 2007 would be of the order of 80,000 MW unless we have viable alternatives to bridge this gap. This is not all. Investments would also have to be made in transmission and distribution systems to match with the addition of capacity for the entire 1,40,000 MW ..... It is against this backdrop that the supplemental role of private sector acquires significance. It is to be seen as a solution which is both sector-specific and part of the larger economic reforms. The policy to encourage the private sector enterprises participation in the power sector is an invitation to both Indian and foreign companies to put up generation and distribution projects."

1.10 The Ministry of Power in a post evidence reply added that with a view to meeting the growing demand for power in the 9th Five Year Plan, generation to be added to wipe out the shortages of energy is about 57,800 MW which after allowing for the investment being made in the 8th Five Year Plan on various ongoing projects would require a provision of Rs. 1,25,000 crores only for generation and if we are to also provide adequately for transmission and distribution the total requirement comes to Rs. 2,50,000 crores. It can reasonably be said that the Government sector would not be able to find such an order of resources and our domestic financial institutions also would not be in a position to provide funds of this order. This is where the need for foreign investment including lending by foreign institutions becomes relevant and almost essential. In the long run such investment in infrastructure would have created the necessary addition to GDP and additional income can be expected to have been created to pay for the overseas debt.

1.11 The Ministry of Power further stated that at present due to the constraint of resources of funds with the Indian Financial Institutions, a maximum of 40% from Indian Financial Institutions has been prescribed. 80,000 MW would require a total investment of Rs. 4 lakh crores which means that IFI's must find Rs. 1.6 lakh crores. As against this, the presently assessed strength of the IFI's is only Rs. 38,000 crores for loans and guarantees during the next five years. It is estimated that hardly Rs. 20000-25000 crores would be available as loans. Thus there is a big shortfall, in the availability of funds even for funding 40% of the requirement of funds for setting up power plants in the private sector. The present policy prescribes 20% as equity and 40% as coming from Indian Financial Institutions. The 40% cannot be met from debt market in India. This market is much too

small against the total requirement of Rs. 1.60 lakhs crores required during the next 10-12 years. Therefore, foreign participation in the Indian Power Sector has been welcomed.

1.12 Dr. Arun Ghosh, former Member of Planning Commission pointed out in a Memorandum submitted to the Sub-committee that to the extent that large foreign funding is available, (e.g. for the foreign investor owned ENRON Project), it creates serious foreign exchange problems for the country in the future. Explaining the position in this regard the Ministry of Power stated as under:-

"Availability of foreign exchange to enable the foreign investors to repatriate the dividends on their investment in the power sector could be required only after 3 to 5 years (because of long gestation period of power projects). The LERMS taken up by the Government is already showing favourable results and we are already having comfortable reserves of foreign exchange. In the coming years the situation is likely to improve and no problem for availability of foreign exchange for the purpose of power sector is envisaged. No guarantee of foreign exchange availability is given by the Government of India to the private promoters.

However, Ministry of Finance have fixed a ceiling on aggregate external commercial credit approved per annum for the power sector in order to provide for sustainable balance of payments in the medium term. This ceiling for 1994-95 is US \$ 1.5 billion. This ceiling was prescribed after assessing the sustainability of balance of payments."

1.13 Pointing out that peaking shortfall at the end of 8th Plan would be 8% rather than 20% forecast by the Power Ministry, Shri Arun Ghosh, Former Member, Planning Commission stated in a memorandum as follows:

"If the 8th Plan target of 30537 MW of additional power capacity were to be realised, then the total installed power capacity at the end of the 8th Plan would have been about 100,000 MW. Assuming a steady growth of the 'peak' demand for power at 6 per cent per annum, the actual peak demand at 54300 MW in 1990-94 may be expected to increase to 68800 MW by 1997-98 (the terminal year of the 8th Plan), and actual capacity would then have been 100534 MW (i.e. 69997 MW at the end of 1991-92 plus 30537 MW added during the Eighth Plan). Even assuming no improvement in Transmission and Distribution losses (at 23 per cent) and auxiliary consumption (7.5 per cent of capacity), the total peak availability would have been 70467 MW, against the likely demand for 68800 MW."



The expert further added:-

"In fact, however, the Ministry of Power now estimate the 8th Plan addition to power capacity at only about 20,000 MW, which would give a total capacity of 89997 MW (or, say 90,000 MW) by the end of the 8th Plan; which – with T&D losses at 23 per cent and auxiliary consumption at 7.5 percent – would give peak power availability at a little under 63000 MW, lower than the likely peak demand of 688800 MW, a peaking shortfall of some 8 per cent, rather than 20 per cent forecast by the Power Ministry."

1.14 To a query whether the projections of demand made by the CEA in the 14th Electric Power Survey are realistic and the actual demand tallies with the projections made by CEA, the Power Secretary stated during evidence:-

"Coming to the aspect of projections, the CEA has a certain model on the basis of which it did a survey and made projections, if you look at the past projections, I would say that the success rate has been uneven. There have been stages where the projections have fallen short of the actual demand. There have been stages where the projections were higher than the actual demand."

1.15 Elaborating the position in a written reply, the Ministry of Power stated as follows:-

"The variation between the projected demands and actual demands is marginal since the year of availability of actual demand i.e. 1989-90.

It has been found that the country may be requiring about 1,42,000 MW comprising 52,000 in hydro, 82,000 MW thermal and 8,000 nuclear to meet the said power requirement in the next 15 years covering 8th, 9th & 10th Plan periods. These capacity additions are based on the projections made by 14th EPS Report considering a reasonable gradual reduction in the T&D losses over next fifteen years period since 1992."

### **C. DETAILS OF THE POLICY**

1.16 With the objective of bringing in additionality of resources, for the capacity addition programme in the electricity sector, Government formulated a policy to encourage greater participation by privately owned enterprises in the electricity generation, supply and distribution field. The policy in this regard widened the scope of

private investment in the electricity sector and introduced modifications in the financial, administrative and legal environment, for the private enterprises in the electricity sector towards making investments in the sector by private units attractive. Based on this policy, a scheme was framed to encourage private enterprises participation in power generation, supply and distribution as per the 'Resolution dated 22nd October 1991', the details of the scheme are given below:—

### 1. Widening the scope of Private Sector Participation:

- Private sector units can set up thermal projects—coal lignite or gas based, hydel projects and wind solar energy projects of any size.
- private sector entrepreneurs can set up enterprises, either, as Licensees, or as generating companies. New licenses, can be issued by the State Governments, to private units, willing to enter the electricity sector as licensee companies *i.e.* as a licensee holding a license issued under Section 3 of the Indian Electricity Act, 1910 by the State Government concerned to supply and distribute energy in a specified area who may or may not have a generating stations.
- Generating companies can now be set up in the private sector. This has been brought about through an amendment to the Electricity Supply Act, 1948. Hitherto generating companies could be set up only by the Central or State Governments or both. Generating Companies can now set up one or more generating stations and offer to sell electricity to the grid, unlike licensees who supply and distribute energy within a specified area and who may or may not have generating stations. It is possible for an enterprise to combine the functions of a generating company in one area and that of a licensee in another area. The generating company, will sell power to SEBs, on the basis of an agreement and at tariff, based on parameters applicable, to generating companies.
- Distinct from utilities power plants in the private sector are captive power plants set up to serve an industrial or other unit, where the requirement of that unit is for a large continuous supply of electricity and a reliable sources of electricity is necessary. Surplus electricity from captive power plants can be offered for sale to the SEBs.

## 2. Modifications in the Financial Environment for Private Sector Units:

- Debt equity ratio upto 4:1 is permissible for all prospective private enterprise entrants (i.e. for both licensees and generating companies) to the electricity sector, that is, a minimum of 20% of the total outlay should be the equity component; at least 11% of the total outlay must come through promoters' contribution. In the rest of the total outlay, less equity, which may be upto 80% of the total project cost, an amount not exceeding 40% of the total outlay may come from Indian public financial institutions, but the remaining amount should be met from other sources. In other words, to ensure that the investor brings in additionality of resource to the electricity sector, not less than 60% of the total outlay for the project must come from sources other than Indian public financial institutions.
- Upto hundred per cent (100%) foreign equity participation, can be permitted for projects set up by foreign private investors in the Indian electricity sector.
- With the approval of the Government, import of equipment by private utilities electricity projects can be permitted, in cases where a foreign supplier(s) agency(ies) is/are extending concessional credit.
- The financial parameters laid down in the electricity (supply) Act, 1948 of the licensee companies with regard to rate of return has been raised through an amendment to the Sixth Schedule in paragraph XVII 10(b) of the Electricity (Supply) Act 1948 from the 2% as applicable over the RBI rate, to the investments already made to 5% over the RBI rate for investments made after this amendment.
- Special appropriations may be permitted by the State Governments each year to cover the higher debt redemption obligation of the licensee Sixth Schedule, Paragraph XVII 2(c) (vb) of Electricity (Supply) Act 1948, which was not the case earlier.
- In case of licensees capitalisation of interest charges during the construction period (i.e. between the date of grant of licence and the date when the undertaking commences supply) as actually accrued, will be permitted to be included as original cost'. This facility will apply also to expansions, after this amendment. The previous system was calculating the interest

charges at one per cent above the average RBI's rate. This amendment has been brought in about Sixth Schedule Paragraph XVII, 7(b) of Electricity (Supply) Act, 1948.

### **3. Modification in the Administrative Environment:**

- For faster clearances of private sector projects, a High Powered Board has been established to monitor the issue of clearances including the statutory clearances and resolve any outstanding issues pertaining thereto within a definite time frame.
- The High Powered Board would function under the Chairmanship of the Cabinet Secretary to the Government of India. It will comprise Secretaries of the Ministries concerned of the Government of India. State Government officials, amongst others, may be co-opted to the Board. The High Powered Board's functions include, consideration of all matters concerning private sector investment proposals from indigenous, Non-resident Indians, and foreign sources.
- The Investment Promotion (I.P.) Cell in the nodal ministry i.e. the Department of Power, has been set up to provide information and assistance to prospective entrepreneurs in the electricity sector regarding (i) the scheme to encourage private sector participation in the electricity generation, supply and distribution field, (ii) the clearances to be obtained, and (iii) the modalities of obtaining the clearances. I.P. Cell will also monitor the processing of proposals for setting up projects from the private sector units in the sector and take action for time bound clearances of the proposals.

### **4. Modifications in the Legal Framework: Amendments to (i) Indian Electricity Act, 1910 (ii) Electricity (Supply) Act, 1948.**

- Hitherto all electricity schemes above the value of Rs. 5 crores had to be submitted to the CEA for its concurrence. This ceiling limit has been made flexible and has been raised to Rs. 25 (twenty five) crores.
- Licensee companies will be granted licenses of a longer duration of 30 years in the first instance and subsequent renewals of a longer duration of 20 years, instead of 20 and 10 years respectively as was the case before the amendments to the I.E. Act, 1910 (Section 6) came into force. This ensures stability in the operation of the licensee.

- The interpretation of generating companies has been amended [Section 4 A of Electricity (Supply) Act, 1948] to mean a Company registered under the Companies Act, 1956 which has among its objectives to establish, operate and maintenance of generating stations.
- Generating companies can enter into a contract for the sale of electricity generated by it with the State Electricity Board in any State where it owns operates generating station(s) or in any other State it is carrying on its activities or with any other person with the consent of the competent Government. The amendment has been incorporated in Section 43(A)(i) of the Electricity (Supply) Act, 1948.
- The tariff for sale of electricity will be in accordance with the normative parameters regarding operation and PLF and in accordance with the rates of depreciation and reasonable return and such other factors as will be determined by the Central Government from time to time. This has been provided in Section 43A(2) of the Electricity (Supply) Act, 1948.
- The licensee or a generating company would have to follow the directives of Regional Electricity Boards (REBs) in the interest of the integrated grid operation. Any dispute with reference to the integrated operation will be referred to the Central Electricity Authority (CEA) whose decision shall be final. Pending the decision of the CEA, the REBs or Regional Load Despatch Centres (RLDCs) directions shall prevail in the interest of smooth operation of the grid as laid down in Section 55 of Electricity (Supply) Act, 1948.

1.17 In addition to above the following incentives are also available:—

- The condition of dividend balancing by export earnings which is normally being applied to cases of foreign investment upto 15% equity will not be applicable to foreign investments in the power sector.
- The rates for depreciation in respect of assets have been liberalised.
- The customs duty for import of power equipment has been reduced to 20% and this rate has also been extended to machinery required for modernisation and renovation of power plants.

- A five year tax holiday has been allowed in respect of profits and gains of new industrial undertakings set up anywhere in India for either generation or generation and distribution of power. The five year tax holiday will begin from the year of generation of power.
- The excise duty on a large number of capital goods and instruments in the power sector has been reduced to a lower rate.
- The 16% return on the foreign equity included in the tariff can be provided in the srespective foreign currency.
- Fixed costs can be recovered at 68.5% PLF. Attractive incentives are prescribed for performance beyond this PLF.
- Normative parameters under which generating companies will operate have been notified which *inter alia* provide for 16% rate of return on the paid up and subscribed equity.
- Generating companies operating coal based, gas based and hydro projects can sell power on the basis of a suitably structured two part tariff.

1.18 Giving a perspective of the new power policy the power Secretary stated during oral evidence:-

“The private sector initiative is not the most important initiative in our power policy. It is one of the elements of our policy. We have to have an integrated policy to deal with this problem.

To put it in a very simple, commonsense term, it is an organic chain where there are a number of important links. The first link is obviously about adding to the existing capacity. That is the easiest thing to do. But, that is not enough. What we are looking at in this organic chain is a policy by which we can ensure what is installed is available for generation, what is available is fully utilised for generation, what is generated is efficiently transmitted and distributed to the consumers, what is distributed is correctly metered, what is metered is correctly billed and what is billed is promptly collected. Unless we look at each link of the chain, we are not going to tackle the problem. In this important chain, the private sector initiative is one link. So, I want you to see them in a perspective lest there should be an impression that this is the only thing which we are pursuing in our policy. This is the area which has attracted the maximum public attention. Perhaps that

could be one reason why, what we are trying to do on the less glamorous areas has not got the same kind of publicity."

1.19 Electricity is a concurrent subject and implementation of any policy initiative largely depends on state governments. However, no prior consultations appeared to have been held with State governments before announcing major policy changes with regard to Power Sector.

1.20 The State Governments of Tamil Nadu, Assam and West Bengal informed the Sub-Committee that they were not consulted as regard to the detail provisions in the new power policy.

1.21 Enquired whether the State Government was consulted prior to announcement of new power policy with regard to the rate of return, the question of extending guarantee etc. the West Bengal State Government stated in a written reply as below:-

"Our records do not indicate that the State Government was consulted prior to announcement of the power policy by the Union Government specially with regard to rate of return, the guarantees, etc. However the Chief Minister, West Bengal had written a letter to the Union Minister for Power expressing the State Government's views specially with regard to the high rate of return expected by foreign investors."

The West Bengal State Government further added:-

"The Government of West Bengal had earlier expressed reservations about the guaranteed return of 16% on equity linked to 68.5% PLF with additional return for increase over the prescribed PLF percentage. The Government has also expressed its views regarding the returns for investors being protected in foreign exchange terms and the necessity of extending guarantees and counter-guarantees. Even in the context of a free market economy, returns and risks go together in any investment and there is no reason, whatsoever, to protect the returns by assuring to assume responsibility for the risk factors."

1.22 When the Sub-Committee expressed its astonishment that no prior consultation were held with the State Governments in regard to provisions of new power policy, the Power Secretary stated:-

"It is not correct to say that they were not consulted. As early as July, 1990, we wrote to the Power Secretaries of all States in this regard. Even informal consultations and interactions had been there. No State disagreed with any of these points .... Now, they

have no reason to feel upset because as a result of interaction, we have been flexible and responsible and there has been a subsequent notification that the norms laid down in our guidelines shall only operate as ceilings and states have to negotiate within that."

1.23 In a written reply the Ministry of Power stated in this context as under:-

"Prior to the necessary legislative amendments to the ES Act, 1948 and Indian Electricity Act, 1910 in October, 1991 which permitted generating companies in the private sector, State Governments were consulted on the subject. On 3rd July, 1990, Secretary (Power) wrote to all the Chief Secretaries explaining the main features of the proposed policy initiatives as well as the proposed two-part tariff system. On the 18th July, 1990, Union Minister of Energy also wrote to the Chief Ministers drawing their attention to the letter of Secretary (Power) to Chief Secretaries.

The letter mentioned the incentives for private licensees which *inter-alia* included increasing the standard rate allowed to them under the sixth schedule of the ES Act, 1948 from 2% above RBI rate to 5% above RBI rate.

As regards the generating companies, the letter explains the two part tariff structure and advantages thereof. It was explained that the fixed charge would *inter-alia* cover a return on the equity component. The tariff would be determined with reference to operational and load factor norms to be laid down by the CEA and in accordance with the rates of depreciation and reasonable return to be notified by the Central Government.

The return of 16% was adopted on the pattern of incentives provided for the licensees which was taken as a bench mark and had been finalised after due consultation with the States as explained above.

Apart from the formal consultations that have been taking place, the policy has evolved also on series of informal consultations with the State Governments and other expert groups and bodies at different forums.

The necessary legislative amendments were carried out after the approval of the Parliament.

It should also be borne in mind that the March, 1992 Notification lays down certain ceilings and the State Governments/SEBs have the liberty to negotiate an acceptable deal within these ceilings. In



fact, the response to the GOI's scheme has been very encouraging which is borne out by the fact that as on today we have 137 projects at different stages requiring an investment of about Rs. 2 lakh crores. This shows the wide acceptability of the GOI scheme by not only the investors but also all the State Governments including States like West Bengal, Orissa, Bihar, Tamil Nadu etc."

## II. PRIVATE SECTOR PARTICIPATION

### A. CHOICE OF INVESTORS

2.1 Asked about the procedure followed in regard to selection of private companies for power projects, the Ministry of Power stated in a note that the Indian power sector was an uncharted area for potential investors when the private power development policy was launched and there was apprehension then about the response from the private sector enterprises, both foreign and domestic. The perception of the investors about India as an investment option had to be carefully borne in mind in the background of fierce competition in the international market. Negotiation were therefore an inevitable method for awarding of projects. It was mentioned that even in the USA in the initial years of allowing independent power production, the utilities adopted both routes of negotiations (MOUs) and bidding (Competitive bidding) for awarding of projects.

2.2 The Ministry of Power pointed out, that limited experience exists in the area of competitive bidding through out the World. Most of the project developers find this to be a costly and time consuming exercise as preparation of feasibility reports etc. which is a pre-requisite for bidding involve high costs.

2.3 Emphasising the need for competitive bidding in awarding project, Associated Chambers of Commerce & Industry of India stated in a Memorandum submitted to the Sub-Committee as follows:-

*"While the initial few projects have been awarded on the basis of negotiated offers and MOUs, the time has come for competitive bidding in awarding projects based on clearly spelt out guidelines and evaluation criteria. The bids presently being invited by various State Governments are not really competitive as the terms and evaluation norms are not clearly spelt out. Most of the negotiations and decisions are therefore taken at the political level with obvious implications and leading to higher costs."*

2.4 Several experts, representatives of industrial organisations who appeared before the Sub-Committee also reflected the above view and stressed the need for competitive bidding in award of projects.

2.5 Pointing out that the negotiated route was the only feasible option in the initial phase, the Ministry of Power stated in a written reply as under:-

"At the time the private power policy was launched in 1991 the methodologies regarding Independent Power Projects (IPP) had not totally crystallized. Therefore, like other countries – developed and developing – the initial project solicitations was through the MOU route. Furthermore, the financial health of the State Electricity Boards (SEBs) would not have evoked the requisite confidence amongst the investors to participate in an open bid for the private power projects in the initial stages. The negotiated route was, therefore, the only feasible option to provide a fillip to the private power policy in its initial phase of implementation. However, the importance of a transparent competitive bidding procedure in assigning power projects to the private companies has very well been recognized by the government and it would now be the obvious choice after necessary experience has been gained by the government and the private sector."

2.6 Asked about the number of projects which have been awarded on the basis of negotiations a representative of Ministry of Power stated during oral evidence on 8th February, 1995:-

"Sir, at present, we have in the country about 136 projects which have been identified for private sector participation. Out of these there are some projects which have gone on competitive bidding route. There are some projects in Rajasthan, Maharashtra and Andhra Pradesh which have gone on the competitive bidding route. From this month we have made it mandatory that all the projects will have to go on the competitive bidding route. Even in most of the MOUs that were signed earlier, the company was not directly selected. In some cases there were requisite qualifications which means that before engaging a company against MOUs you did see the financial strength and managerial capability of the company. So, there was some amount of identification in some of the cases. But, henceforth we have prescribed that each case will have to go through a price bidding process."

2.7 Regarding the number of projects awarded on the basis of negotiation, Ministry of Power stated in a post evidence reply as follows:-

"Regarding awarding of projects generally, it needs to be clarified that the Central Government does not award and project to an IPP. It is the State Government which is responsible for awarding of projects to IPPs. Currently, 137 projects are at various stages of negotiations but not a single project has as yet achieved financial closure, only after which it can be finally said that a project has been awarded.

It also needs to be noted that it is not a fact that in all the projects negotiated so far the negotiations has only been on a one to one basis. Many of the State Governments had asked for Request for qualifications (RFQ) and many States like Andhra Pradesh, Maharashtra, Rajasthan and Haryana have finalized their latest batch of projects on a partial bidding route."

2.8 The Ministry of Power however informed that the Dabhol Power Company achieved financial closure subsequently on 1.3.1995.

2.9 The Ministry stated in a written reply that the Minister for Power had, written to all the Chief Ministers in October, 1993 that it is necessary to introduce competition by asking for price bids. This was followed by a letter from Secretary (Power) to all Chief Secretaries requesting them to fix a date beyond which SEBs would not offer any projects except through the bidding route. Recently, vide letter dated 18.1.1995, the Ministry of Power has clarified to all State Governments that all future projects should come through the process of competitive bidding and that the CEA would not entertain any future proposal which have not been processed through competitive bidding. Some time has, however, been allowed to see the outcome of the existing MoUs. Ministry of Power has also circulated to the State Governments guidelines for competitive bidding to assist the State Governments.

2.10 Asked to give details regarding the MoUs signed by the State Governments the Ministry of Power could furnish information regarding only 83 proposals. In regard to most of the MoUs the validity period is either not available or not known to the Centre. It is however observed that in respect of MOUs for which validity period is indicated, in some cases the validity period is as long as five years.

2.11 According to media reports, one state Government had signed as many as 23 MoUs with potential private power investors to beat a deadline fixed by the Central Government for switching over to competitive bidding route. Twenty-three MoUs were reportedly signed in a hurry but that still left 42 further applicants dissatisfied. The State Government also reportedly sought further time to accommodate them.

## **B. RATE OF RETURN ON EQUITY**

2.12 The normative parameters for operation of the generating companies are contained in the two-part tariff notification published on 31st March, 1992 followed by an amendment notification dated 18th January, 1994. The tariff notifications allow 16% return on equity

as on element of the fixed cost at 68.5% Plant Load Factor (PLF) and provide additional incentive upto 0.7% of return on equity for each percentage point increase of PLF above 68.5%.

2.13 According to Ministry of Power the electricity tariff is generally "structured a two part tariff mechanism which ensures recovery of the fixed costs (essentially the capital costs and a reasonable return) and the variable costs (basically the fuel costs).The two part tariff notification also aims at following this well-accepted procedure."

2.14 The relevant provisions of the notification dated 31st March, 1992 reads as under:-

"Full fixed charges shall be recoverable at generation level of 5500-600 hours/Kw/year. Payment of fixed charges below the level of 5500 Kwh/Kw/year shall be on pro-rata basis. There shall not be any payment of fixed charges for generation level above 6000 hours/Kw/year. However, generation above 6000 hours/Kw/year shall be at negotiated rates between the generating companies and the Board, which shall not include the fixed cost element. While computing the level of generation, the extent of backing down, as ordered by the Regional Electricity Board shall be reckoned as generation achieved. The payment of fixed charges shall be on monthly basis, proportionate to the electricity drawn by the respective Boards. Necessary adjustment based on actual sales and deemed sales shall be made at the end of the year."

2.15 The above provision was amended on 18th January, 1994 to provide that for generation above 6000 Hours/Kw/year, the additional incentive payable shall not exceed 0.7% of return on equity for each percentage point increase of PLF above that level.

2.16 Pointing out that 16% rate of return on equity is on the high side and making a comparison with China, Shri K. Ashok Rao, President, National Confederation of Officers Associations of Central Public Sector Undertakings stated in a written submission that against a ceiling of 12% imposed by the Central Government of China, several large cities are actually offering only 10% ROR. He also stated that for the Shajiao B Power plant in China, an all-inclusive tariff on take-or-pay basis is formulated. The all-inclusive charges fixed upto 60% PLF and additional charges provided in excess of 60% PLF. In China, the IRR on equity is normally fixed at 15%.

2.17 Asked about his view on guaranteed rate of return, Shri N. Tata Rao, former Chairman, Andhra Pradesh State Electricity Board stated in a written reply:-

"The guaranteed return of 16% on the basis of about 68% PLF is very high and this need not have been given at all. They should have been asked to quote the lowest price per KWH subject to the condition that not less than 68% of the energy generated would be taken by the SEBs. For any higher PLF the benefit should accrue essentially to the consumer. About 15/20% of the benefit could go as an incentive to the investor."

2.18 According to Dr. Arun Ghosh at 85% of capacity, the guaranteed return would be 27.55 per cent of the equity; at 90% Plant Availability - promised by ENRON, for which offtake is guaranteed- the return on equity would be 31.05% and the price of power paid to ENRON would be adjusted upwards to guarantee this return on equity.

2.19 A number of other experts who furnished Memoranda to the Sub-Committee also held that guaranteed return of 16% on equity at 68.5% PLF is high. On the other hand industrial organisations pleaded and justified the need for 16% rate of return.

2.20 Advancing an argument that 16% returns is on the lesser side PHD Chamber of Commerce & Industry stated in its Memorandum submitted to the Sub-Committee as follows:-

"It needs to be underlined that Indian Financial Institutions and nationalised Banks have been charging interest rates ranging between 15% and 21% in the last two decades. Even today the rate of interest are fairly high. In view of the interest rate structure, it appears that 16% return is on the lesser side and not otherwise. People do not invest when expected return is equal or less than the rate of interest."

2.21 Emphasising the need for giving a 'reasonable return' to investors Ministry of Power stated that establishing a generating project is a highly capital intensive activity and involves long gestation periods which leaves many uncertainties. Moreover, at the time when the private sector development policy was initiated by the Ministry of Power in 1991, the overall economic condition in the country was extremely depressing. Added to it, the performance of SEBs was also at its nadir. As a result, it was necessary to generate amongst the prospective investors adequate level of confidence about the likelihood of "reasonable return" on their investment in the power sector. In the absence of such an assurance, there was no expectation whatsoever, of any private investment in the power sector. Section 43(A) of Electricity (Supply) Act 1948 therefore, provides for a "reasonable return" in determining tariff. The basic idea behind determination of "reasonable

return' is to assure the Investors that their investment would be safe and will yield a "reasonable return" which is in line with the practice adopted in a number of other countries like Pakistan, China, etc. and also in consonance with the practice obtaining for fixation of tariff for supply of Power by Licensees.

2.22 Considering the fact that the Government bears most of the commercial risks involved in private power projects by assuring guaranteed off-take of power at a very high level of guaranteed return, etc. the Committee enquired how the Ministry justified promising return of 16% rate of return.

2.23 Ministry of Power in its post evidence reply stated:-

"First of all it needs to be clarified that the policy does not guarantee any return on equity. The policy provides for 16% return on equity at 68.5% PLF. If the performance of the Power Station goes below that level then there is pro-rata reduction in the return. The policy also, however, enables the parties to negotiate an incentive payment upto a maximum of 0.7% for each one percent improvement in PLF beyond 68.55. As regards risks, the project promoter has still to bear several risks like construction risk, country risk (policy consistency, stability etc.,) and long term operation risk."

2.24 Justifying the need for giving 16% rate of return on equity, a representative of Ministry of Power stated during evidence:-

"When the private power policy was looked at, it was very well recognised that the power plant takes about four years to come up. It means that in these three to four years, the equity gets no return. So, 16 per cent rate of return in equity corresponds to about 11 per cent to 12 per cent rate of internal rate of return ... When the policy was framed in 1991-92 the foreign exchange position was very bad. So, at that time the considered opinion was that no one would invest in India unless the internal rate of return on equity was more than 22 per cent."

2.25 The equity IRR in respect of some of the projects cleared by CEA on the basis of project report submitted to CEA is stated to be as under: These IRR's have been computed at a PLF of 68.5%.

	Equity IRR %
1. Paguthan CCGT	12.60
2. Jegurupadu CCGT	13.56
3. Godavari CCGT	15.85
4. Maheshwar HEP	10.62
5. Baspa HEP	11.48

2.26 On the guaranteed rate of return, the Finance Secretary stated during oral evidence:-

“Sir, on the issue of gurantee, it is not a gurantee in the sense that no mattter what happens they will earn 16 per cent. What is actually happening is that they are calculating the tariff in such a way that the return element will be 16 per cent provided the plant achieves all the efficiency norms. This is 16 per cent is not an internal rate of return. My understanding is that the way the tariff is calculated this is the return on equity. In other words, it starts to operate only after the plant goes into commercial operation. The internal rate of return is actually lower because for the entire period of construction no return on equity.”

2.27 The details of PLF committed for some of the fast track projects are as follows:-

(i) DPC project of M/S Enron

Plant Load Factor – As per PPA

Base load factor (or 90% availability) - 7884 hrs.

Peak load capacity (or 90% availability) – 7884 hrs.

At the time of meeting of techno-economic appraisal of the project held in CEA on 11th November, 93 CEA observed that Phase-I (695 MW) is justified but phase-II (1320 MW) could call for backing down the existing units and therefore may be postponed.

(ii) Mangalore TPS of M/s Cogatrix

As per PPA the project have a “Must-Run” facility for PLF equivalent to 85% with corresponding adjustment for the



monsoon period when load requirement is less. The maximum assured evacuation during monsoon season has been fixed at 75% PLF (July to September) and 95% PLF in the other months. It has been stated that this PPA is being examined by GOI and may have to undergo change.

(iii) Jegurupadu & Godavari GBPPS

The PPAs provides sale of electrical energy beyond 71% PLF to a third party. It has been stated that this PPA is being examined by GOI and may have to undergo changes on completion of scrutiny.

2.28 Quoting the Electric Power Research Institute, California, the Confederation of Indian Insutry stated that a reasonably well maintained system would opeate at 80% in the first 10 years down to 75% at the end of the 20th year and down to 50% at the end of the 30th year.

2.29 It is observed that most of the Coal based plants of NTPC have been operating at a PLF above 75%. The Korba (unit 4) achieved a PLF of 88.13% in 1994-95 (upto Nov. 94). The PLF of Nine units of NTPC was over 80% during 1994-95 (upt to Nov. 94).

2.30 The Sub-Committee observed that the return to private investors could go up to as much as over 31% for operation at 90% PLF. Considering the fact that plant operations are economised at a higher capacity which provides an in-built incentive to the generating company, the Sub-Committee desired to know the necessity of offering additional incentive for PLF above 68.5%. The Ministry of Power stated in a written reply as follows:-

"In a two part tariff structure, generation above the normative level of 68.5% is mutually advantageous to the Generating Company and to the Utility since the power purchased above the normative level will cost only a small percentage of the basic cost of power below the normative level. Since the entire recovery of the capital cost would have been effected at the level of 68.5% PLF, the purchaser pays only the fuel cost which will mean that the power so purchased will be very economical. At the same time, there will be considerable incentive for the Generating Company to reach optimum generation since he would get the incentive at the agreed rate. Thus, the fixation of tariff on this basis, which is based on international practice, has considerable advantage."

The Ministry further stated:-

“The additional incentive of 0.7% on equity for each percentage increase in PLF is only an upper limit and the SEBs are at liberty to negotiate with the IPP to reduce this incentive to the extent possible. An upper limit has to be imposed as in the absence of such a prescription, some of the SEBs had started negotiating incentive payments at levels much higher than 0.7%. It has, however, to be appreciated that as a PLF of a power plant improves beyond 68.5%, in spite of increase in the rate of return on equity consequent to the additional incentive, the levelled tariff generally gets reduced and the system is able to get extra energy. Both these aspects are beneficial to the Board and the consumers. This is not likely to be available if no incentive is offered to an IPP for operating the plant at higher than 68.5% PLF.”

2.31 The Confederation of Indian Industry stated in this connection in its Memorandum that the incentive offered for improved operation beyond 68.5% PLF does not increase the tariff. The unit generated beyond 68.5% will on the contrary cost less to the SEBs as the element of fixed cost is not chargeable beyond 68.5% PLF. In addition this fulfills the dual objective of more power to the nation and improved performance by the existing utilities.

2.32 When the Sub-Committee pointed out that the guarantee on return appears to be more in tune with and carries all evils of the regime of administered pricing, the Ministry of Power stated in a written reply that “price regulation for electricity tariff is a common practice followed in many parts of the world. This is normally fixed with the approval of the concerned Regulatory authorities. While it is admitted that administered pricing has a number of disadvantages, it is to be remembered that the power sector is yet to operate on free market conditions and until a competitive environment exists, it is difficult to conceive of a situation where Investors would risk their money in an atmosphere where there is neither any competitive pricing mechanism nor an assured “reasonable return”.

2.33 Enquired whether it is not desirable and feasible in the long run to give freedom of tariff and freedom of power distribution to the private power producers in order to eliminate the guarantee on return, PPA, etc. the Government of West Bengal stated in a written reply as follows:-

“This question/suggestion implies that the private sector be allowed the freedom of operation as well as distribution to eliminate the

necessity of guaranteed returns, power purchase agreements etc. This would also mean that the private sector investors would assume the risk of returns in such a scenario. While this would be welcome from a theoretical point of view, the same may not be enforceable unless the private sector investors are compelled to take up distribution and licenses are granted to them accordingly. In a sector like power, competition is not possible and the result would be a private monopoly which, in practice and our experience would turn out to be much worse than public monopoly. Moreover, any investment that would be done now and henceforth would be at a high cost and such cost has to be ultimately passed on to the consumer which would only push up inflation in all walks of life. There has to be a detailed debate on the pros and cons of involving private sector in generations, transmissions and distribution so as to ensure control of costs and ultimate benefits to the economy."

The Ministry of Power stated in this connection:-

"The Ministry is aware that alternative tariff structures other than a cost plus system are possible. As per the latest amendment to the tariff notification dated 22nd August, 1994 the tariff based on a different structure can also be approved on the recommendation of the State Government if the overall tariff does not exceed the tariff determined in accordance with the norms of the notification in other words, the price based on the tariff notification would act as a ceiling for negotiations between the SEBs and the Generating Company, which at their will could adopt a simple tariff, specifying the rate at which the private company can sell power to the SEBs or to any other person. It is feasible that in the long run with a fully competitive private power market, the basis for comparison will be a firm tariff."

2.34 The Sub-Committee also took note of the CII suggestion that the issue regarding the tendency to higher generating costs could be addressed by awarding projects on basis of competitive tariff and shifting from 'Cost Plus' approach to 'Delivered Price' concept.

2.35 Enquired whether the Ministry did not consider that 'delivered price' concept is a preferable option which could avoid guaranteeing returns and having complex agreements with private investors, the Ministry of Power stated in a written reply as under:-

"There seems to be a misunderstanding that the two part tariff notification of the GOI has led to higher costs for private power. The two part tariff model was developed on the basis of the K.P.

Rao Committee which took into account all related aspects and as the single part tariff was found to have many deficiencies. The two part tariff was developed after detailed consultations with the State Governments/SEBs. Moreover, the cost per MW of the project, which is a key factor in the two part tariff model, undergoes thorough scrutiny by the SEB/State Government/CEA. The CEA accords techno-economic clearance only if it is satisfied that the cost estimates are reasonable. The CEA also has access to international data on plant and equipment cost and in all the schemes cleared so far the cost has been competitive and reasonable.

The other important issue is that even in a single part tariff or in the concept of delivered price 'there would be two elements determining the price for power - a fixed element and a variable element. Even in the case of Pakistan, with its much talked of delivered price concept, there is an element of fixed cost and variable cost. Similarly, if one examines the RFP's of other countries as well, one finds that wightage is given to other factors as well and not only on 'delivered price'. However, both the options are feasible but in the initial phase there are advantages in the 'cost plus' approach because of compatibility with CEA procedure for project approval and SEBs own experience with this form of pricing through NTPC tariff etc. With the change over to competitive bidding and with SEBs gaining more experience, 'delivered price' option can be exploited.

It has also to be understood that the whole process of negotiation for a power plant and its ultimate construction is a very rigorous process and there are no simple procedures or shortcuts. In the competitive bidding procedure, very complex documents like the RFQ, RFP, PPA, FPA, IA etc., have to be prepared apart from the other contracts like the EPC contract etc. Therefore, just by shifting from the cost plus basis to the delivered price concept would not make any difference as there is nothing wrong with the present cost plus approach. Moreover, it needs to be further clarified that GOI's notification only lays down certain ceilings, leaving it open to the SEBs/State Governments to negotiate good deals within the ceiling laid down."

2.36 Enquired about the views of Finance Ministry on cost plus approach, the Finance Secretary stated:-

"We are not in favour of cost based processing but it is the system we have been developing and CEA also works on that. We have been consistently saying that we should be able to define not the

capital costs so much per megawatt but the cost of the power per unit. We do not do that. We have no experts. That has to be done by the CEA."

The witness added:-

"The World Bank has included this as one of the recommendations. They say that you determine the final price of power."

### C. CAPITAL COST

2.37 Eight private sector power projects have been approved by Cabinet Committee on Foreign Investments (CCFI) from foreign investment angle. Details of the capital cost of the projects as per the information furnished by the MOP in August, 1994 are given in the table below:-

Sl.No.	Name of Project State/Company	Capacity (MW)/Fuel	Approx. Cost. (Rs. Cr.)	Cost per MW (Rs. cr.)	Cost of generation/ tariff (Rs./KWH)	Agency which has agreed to buy power
1.	Dabhol CCGT/ Maharashtra/ Enron Power, USA	695 2015	2912.00 9053	4.19 4.49	2.44 (Ph.I) 2.40 (Ph. I + II)	MSEB
2.	Visakhapatnam TPS/ Andhra Pradesh/ Ashok Leyland & National Power U.K.	10000 (2x500)/ Coal	5817.60	5.82	N.A.	APSEB
3.	Manglore TPS/ Karnataka Cognetrix Dev. Co. USA	1000 Coal	1696.00 (Ph.I) 5088.00 (All 3 Phases)	5.08 5.09	N.A.	KEB
4.	Ib Valley TPS/ Orissa/ AES Corp. USA	420 (2x210)/ Coal	2025.60	4.82	2.30	OSEB
5.	Jegnapadu GBPP/ Andhra Pradesh/ GVK Industries, USA	235 Gas	827.00	3.52	2.11	APSEB

Sl.No.	Name of Project State/Company	Capacity (MW)/Fuel	Approx. Cost (Rs. Cr.)	Cost per MW (Rs. cr.)	Cost of generation' tariff (Rs./KWH)	Agency which has agreed to buy power
6.	Godavari GBPP/ Andhra Pradesh/ Sepctrum Power Generation Ltd. USA	208 Gas	748.43	3.60	1.95	APSEB
7.	Paguthan GBPP/ Gujarat/ Gujarat Torrent Elect. Co.	615 Gas	2298.14	3.74	1.97	GEB
*8.	Zero unit (NLC) Tamil Nadu/ST power systems, USA	250 Lignite	1127.00	4.51	2.58	TNEB

\* The details regarding cost of the project have been dealt with elsewhere.

2.38 Asked about the tariff agreed to for purchase of power by SEBs in respect of projects cleared by CEA so far, CEA stated:—

“Tariff will be finalised by concerned SEBs/Companies after the closure of financial package in terms of Power Purchase Agreement based on principles norms and parameters prescribed in the Notification No. 251 (E) dated 30.3.92 as amended from time to time.”

2.39 Asked about the cost of power projects completed during the last three years, the MOP stated the average cost per the MW of the completed projects during the last three years varied from Rs. 2 crores/MW to Rs. 3.50 crores/MW approx. it is observed that the estimated cost of coal based Anpara 'B' TPS (2x500) commissioned in 1993 was Rs. 4.70 cr/MW. The cost of gas based Gandhar CCGT commissioned in March 94/September 95 was Rs. 3.80 cr/MW.

2.40 Enquired whether there is any mechanism to check that there is no over capitalisation or other unintended benefits do not accrue to

private companies investing in power projects the MOP stated in a note:-

"Adequate mechanism exists to see to it that the costs are not unduly inflated by the investors. The Electricity (supply) Act has laid down the matters to be considered by the CEA before concurring with any scheme. The CEA is required, *inter alia*, to examine whether the scheme conforms to technical, economic and other criteria laid down by it in accordance with the national power policy and such other directions in this regard as may be given by the Central Govt. Further before the schemes are submitted to the CEA, the project company is required to publish the estimates of capital expenditure and the salient features of the project in the official gazette of the State concerned and in local newspapers alongwith a notice that licensees and other persons interested may make representations on such schemes within a period of two months. The cost estimates have also to be endorsed by the concerned SEB and the State Government before examination by CEA. For generating companies, tariff is primarily a function of approved capital cost. It would be quite clear from this that there are several layers of examination to check the reasonableness of the capital cost of the projects."

2.41 To a query as to whether it can be said that there is no scope for over capitalisation of assets under the present scheme the MOP stated in a written reply that "adequate care has been taken in the private power development policy to ensure that the capital expenditure projected by the Investor is realistic, scrutinised thoroughly by the CEA and is set out in the techno-economic clearance. The State Electricity Boards who sign the Power Purchase Agreements have also to ensure that the capital cost is reasonable and the least possible" ... The Investor may have a tendency to inflate the capital expenditure, especially in view of the long gestation period and the accompanying uncertainties. This can be countered by the CEA during the techno-economic appraisal since the CEA has adequate information about the trend of equipment cost, civil construction expenditure etc. over a period of time in the country and to some extent, outside SEBs have also information about the cost of power projects set up indigenously, as also by funding through bilateral sources. The two major elements of the cost estimates of a power project are (a) equipment cost, and (b) the cost of financing. Since the overall cost will depend on both these factors, the SEBs have to consider carefully the source of equipment and the source of finance, so as to arrive at a cost acceptable to them.

2.42 The MOP stated that as a result of detailed scrutiny by CEA the following cost reductions have been achieved:—

(Rs. in crores)

Name of the project	Original cost estimate furnished by company	Cost cleared by CEA	Reductions effected
Paguthan CCGT	2536.07	2298.14	237.93
Ib Valley U-3&4	2140.27	1993.62	146.65
Neyveli Zero	1507.97	1325.11	182.86
Jegurupadu CCGT	861.24	827.00	34.24
Godavari CCGT	761.20	748.43	12.77

2.43 A non-official witness (Shri K. Ashok Rao, President, National Confederation of Officers Associations of Central Public Sector Undertakings) pointed out in his Memorandum submitted to the Sub-Committee that the cost of private power projects approved so far is unreasonably high and stated that whenever competitive bidding was not enforced in the past as in the case of bilateral aided projects, the cost of the power project was higher. Reacting to this point, the Ministry of Power stated in a written reply as follows:—

“The competitive bidding could result in lower cost than negotiated price with bilateral assistance. however, it may be mentioned that international competitive bidding under World Bank has certain concessions such as exemption from Custom Duty and Excise Duty & Cash Compensatory Support to BHEL for deemed export components, absorption of foreign exchange by Govt. of India and not by the project authorities. However, for bilateral projects the above concessions are not available. Also, the foreign exchange variation liability for repayment of loans is to be absorbed by the project authorities.”

2.44 The non-official and experts who submitted Memoranda/ appeared before the Sub-Committee also expressed their doubts about the reasonableness of the cost of private power projects.

2.45 Asked about the reasons for wide difference between the cost of private power projects and some of the recently commissioned



public sector projects, the Ministry of Power stated in a written reply as under:-

"The cost of equipment during the period of construction of the recently commissioned power stations was much lower compared to the present day cost because the foreign exchange rate has increased 2-3 times and the price indices have increased from 50% to 70%. Further, for the World Bank funded projects, certain concessions such as deemed export benefit, exemption for excise duty were available and IDC was low because of 1:1 debt equity ratio earlier adopted for NTPC projects. As regards the private sector schemes the cost of the projects cleared by CEA is the completion cost and includes escalation etc. as against present day costs of Public Sector Projects."

2.46 Dr. N. Tata Rao, former Chairman of APSEB quoting from a document (November, 1994, USA) entitled 'Project cost of Electricity for Major Alternatives to future Nuclear Power Plants' stated during evidence as well as in a written reply that the cost of electricity from future fossil based power plants assumed to begin operation in the year, 2005 range from about \$ 0.039 to \$ 0.0421 or about Rs. 1.20 to Rs. 1.26. Asked about the the reasons for the cost of electricity from the proposed private power projects being steeply higher than the above assessment of costs, CEA stated in a written reply as follows:-

"The cost of electricity of 3.9-4.21cents/KWH indicated in the question appears to be the projected cost of electricity at 1994 price level in the USA with advanced technology fossil fuel based power generation plants which are expected to be in commercial operation by the year 2005. Further the prevailing conditions for sale of electricity in USA are different from those in the country. For example, the power projects in the US are financed with large percentage of debt at a very low interest rates and very long repayment period. A variety of competitive fuels such as coal and gas are available for power generation. Further, since the private power generation in the US has stabilised long time back there are many developments within the country.

As far as India is concerned, the power generation techno-log are conventional using proven pulverised fuel thermal power generation and combined cycle gas turbine plants. Further, because of lower credit rating of India, the lending institutions stipulate very high equity. If may, however, be mentioned that in a recent article published in US Journals by an independent organisation it has been stated that the cost of electricity in respect of private sector projects in USA is in the range of 6.1-9.80 cents/KWH, i.e.

Rs. 1.9 – 2.84 kWh at 65% PLF as against the sale rate of electricity of Rs. 2-2.6 kWh at 68.5% from private sector projects cleared by CEA. This shows that inspite of high financing in the country, the cost of electricity from fossil fuel based private sector schemes cleared by CEA is not very high.”

2.47 Pointing out that differences in capital costs are unavoidable, Dabhol Power Company (DPC) stated in a written reply that projects can vary in a number of important ways, of which some are:—

- The amount of infrastructure required to be built. For example the Dabhol Project is building a port, harbour, fuel and construction jetties, which will be utilized to promote the development of the region in addition to serving the needs of the power station.
- Fuel used for the project: Coal and gas-based plants have very different capital costs.
- Whether the project is a greenfield (i.e. new) or expansion project. An expansion of existing facilities costs less than a new power plant because some of the infrastructure and equipment required may be previously available.
- Source of financing available to the project: Subsidized financing can lower the overall costs of the plant.
- Taxes and Duties if different also can make a considerable difference to project costs.

The Dabhol Power Company further stated:—

- The Dabhol Project will use General Electricity (GE) equipment. The price of this equipment was negotiated based on international norms and compared to suppliers who could furnish identical equipment.
- In the case of Dabhol, specific high efficiency turbines were desired in order to minimise the amount and thus the cost of fuel required to produce power. This modern technology was not available in India at the inception of the Dabhol project. This equipment was only available through General Electric or a General Electric Licence. GE was therefore chosen and the price of equipment tightly negotiated based on other competitive bids available from other GE licenses.

- Other (consortium) costs associated with the project are all being competitively bid using both Indian and foreign contractors.
- Additionally, India should take comfort in the fact that international lenders such as the US EXIM and OPIC, which are funded by the US Congress, require that all technical and cost aspects of the project are examined thoroughly by experts expected to take every precaution not to lend money to projects with inflated capital costs."

2.48 Regarding reasonableness of the capital cost of Dabhol power project, MSEB in a note stated:—

"The capital cost for 2150 MW project is Rs. 4.48 crores/MW. This cost is not the cost of the power plant and machinery alone, but it includes infrastructure cost of land, road, water etc. in the under-developed Konkan region, cost of development of Dabhol Port, regassification and storage of Liquefied Natural Gas etc.

(a) Plant and equipment cost of Rs. 3.38 crores /MW:

From the bids received for 410 MW Combined Cycle Gas based power plant at Nagothane and 2x250 MW Coal based power plant at Khaperkheda, it is seen that the cost/MW is in the range of Rs. 3.5 to Rs. 4 crores/MW. It is also learnt that the present cost estimate for a proposed combined gas power plant by NTPC is around Rs. 4 crores/ MW.

Hence, Enron's proposal of a fixed capital cost when compared on similar basis has been found to be in line with the current cost.

(b) Harbour cost of Rs. 211 crores:

The cost of harbour has been verified and found reasonable by the State Government experts. The development of this port by Enron will be a major asset to the entire region as it will be available for other users also.

(c) Regassification and storage cost of Rs. 1504 crores:

As regards the regassification and storage costs, a preliminary report of an international LNG expert, deputed by the World Bank indicates that the cost of these facilities are in the range indicated above. However, it may be noted that this cost forms a part of the second phase of Dabhol project, which is not being started immediately. There is no legal binding on

MSEB to go for Phase II. MSEB will examine all these costs in detail through international experts and take further action."

2.49 Dr. Arun Ghosh, a former member of Planning Commission had pointed out in a Memorandum submitted to the Sub-Committee that the ENRON project has been posed for World Bank funding and that the latter declined to fund it because "the project is not a least cost choice for base power generation". Asked about the factual position in this regard the MOP stated in a written reply that on the request of the Department of Economic Affairs, World Bank examined the feasibility of the project and concluded in April/July 1993 that "LNG based project as presently formulated is not economically viable" and this could not be financed by the Bank on the following grounds:

- (i) The project is too large for base load operation in the MSEB system. It would result in uneconomical plant despatch (lower cost coal power would be replaced by much higher cost LNG power) in order to utilise full amount of LNG to be contracted. this adversely affects the economic viability of the project and would place heavy financial burdne on MSEB.
- (ii) The project is not part of least cost sequence for Maharashtra Power development. Local Coal and gas are the preferred choices for base load power generation.

2.50 The Bank based its analyses on 14th Electric Power Survey. (EPS) of CEA and was not convinced with the justification that the project is viable on account of slippages and decline in efficiency of the MSEB's existing system. The Bank advised to strengthen the economic financial viability of the project by reshaping it to include a larger consumer base, viz. the Western Region as a whole; and possible adjustments in phasing and timing of the project. The Bank noted that the sponsors informed them that the PPA envisages the implementation of the project in two distinct phases and provides considerable flexibility with regard to the start and modalities of Phase-II.

2.51 Subsequently, based on the discussion with World Bank Government of Maharashtra reportedly decided to delink phase I (695 MW) from Phase II (1320 MW) in October, 1993. The PPA has been signed accordingly. Scheduling of phase II has been made flexible without any binding commitment on either MSEB or DPC. The phase I will run on imported distillate at the beginning.

2.52 Asked whether as reported in some quarters tariff for Dabhol Power Project was fixed even before the CEA could examined the cost

of the project, CEA stated in a written reply :

"Keeping in view the requirements of the private entrepreneurs in setting up of the power project, CEA have been issuing, as and when required, in principle clearance prior to according techno-economic clearance. In case of Dabhol power project, on the request of the company, in principle clearance was issued by CEA in September, 1993. In November, 1993 CEA accorded clearance to the Dabhol power project subject to fulfilment of certain conditions. On fulfilment of these conditions the CEA communicated its clearance to the Project in July, 1994. In the meantime, the Dabhol power company has been negotiating the tariff with GOM/MSEB. The tariff was finalised in December, 1994. There is no departure from statutory stipulation."

2.53 BHEL informed the Sub-Committee that it had, in February, 1994, indicated that the cost of thermal plant to be set up with BHEL equipment would be around 2.5 crores to Rs. 2.75 crores per MW whereas cost of power projects to be executed with imported equipment through foreign credits exceeds Rs. 4 crores per MW.

2.54 Explaining the reasons for difference in the cost indicated by BHEL and that of private projects, the CEA Chairman stated:-

"In regard to BHEL the price of Rs. 2.75 crores per MW, this cost was discussed in detail with BHEL Executive Director and he clarified the position. First of all this Rs. 2.75 crores per MW is the present day cost. This has to be escalated to arrive at completed cost.

Secondly, this is a turn-key contract price for facilities within the boundary of the power plant. whatever falls within the boundary, it only includes that. It does not include other expenses such as ash disposal pond, intake water system, coal transport system etc."

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Secondly, this is a turn-key contract price for facilities within the boundary of the power plant. Whatever falls within the boundary, it only includes that. It does not include other expenses such as ash disposal, ash pond, intake water system, coal transport system etc. it does not include development charges, architectural fee, legal expenses, construction, supervision etc. IDC is also not included. After accounting for these factors, when we compare with the completed cost of the private sector projects Rs. 2.75 crores comes to Rs. 4.70 crores per MW.

The other example is the Kothagudem Project for which BHEL have given a quotation to Andhra Pradesh State Electricity Board. For Kothagudem, the award has been made to BHEL by Andhra Pradesh Electricity Board. it is Rs. 3.78 crores per MW which is present day cost without any escalation. The average escalation which will take place during three years is about 20% and the completed cost comes to Rs. 4.54 crores per MW."

2.57 Enquired whether BHEL's cost comparison was based on any common basis, the CMD, BHEL stated during evidence:—

"I would like to clarify here that after making suitable adjustments for inflation (the power project take two to three years to complete) interest during construction, if you capitalise, and you also take the development cost into account— because now you are comparing the cost with the IPP, who develops the power projects — then, really the cost will come to around Rs. 3.8 crore to Rs. 4 crore per megawatt. I do not know the cost of IPPs but from the news paper reports I only know the data. There, we find that cost of thermal projects set up by different IPPs are ranging between Rs. 4.85 crores and Rs. 5.85 crores per Megawatt. It may also go up further. Our prices are cheaper by at least Rs. 1 crore to Rs. 1.8 crore per Megawatt."

2.58 BHEL further added in a post evidence reply and mentioned that, whereas the project costs of IPPs are predominantly in foreign currency and any fluctuation in the parity of Indian Rupee *vis-a-vis* those currencies could adversely affect the final completion cost for such projects which incidently have no potential for earning foreign exchange, the cost of projects built with BHEL equipment is predominantly Rupee cost.

2.59 In a written reply BHEL however indicated that the turnkey costs in case of IPPs, after making suitable adjustments for development cost, inflation and IDC may work out to around Rs. 3.6 crores to 4.3 crores per MW.

2.60 Enquired whether CEA has any explanation for the cost private projects cleared by it being higher than offered by BHEL, CEA stated in a written reply as under:-

"In the private sector, CEA has so far cleared four gas based projects (Jegurupadu, Godavari, Paguthan and Dabhol), the average per MW cost for these projects is Rs. 3.73 crores per MW. CEA has also cleared 3 coal based power projects in the Private Sector (Ib Valley, Balagarh and Bhadravati), the average per MW cost of these 3 projects is Rs. 4.69 crores/MW. CEA has also cleared one Lignite based Power Project at Neyveli at a cost of Rs. 5.30 crores per MW. The Lignite Power plants are costlier on account of higher boiler cost. The Neyveli project is further costlier as it consists of one unit only.

The quoted Rs. 3.6 crores to 4.3 cores per MW reported to be given by BHEL are probably based on certain assumptions which are not known to us. It may be mentioned here that in the Private Sector projects cleared by CEA, there are a number of elements which are applicable to Private Sector projects such as execution of projects on turnkey contract with heavy penalty for failure in performance and time delay, additional construction insurance, financing costs which have bearing on total capital cost of the project.

CEA has not received any scheme where BHEL has made turnkey offer for any of the projects in the Private Sector. If BHEL makes an offer at reasonable costs, the same will receive positive response from CEA."

2.61 One expert (Shri N. Tata Rao) pointed out that debt equity ratio of 4:1 without any limits on the rates of interest on the borrowed capital of the investors will boost up the ultimate cost of energy to the consumer.

2.62 Asked about Government's view in this regard the Ministry of Power stated in a written reply that fixing a ceiling on the rate of interest is not favoured as these undergo fluctuations in international market on a regular basis. It would be difficult to lay down an optimum rate of interest to be permitted in computing tariff of power projects. The Ministry of Finance keeps an overall control on the

aspect of interest rates. Interest rates on external debt for the power projects is governed by the guidelines and conditions laid down by the Finance Ministry (DEA). Within the overall parameters laid down by the Finance Ministry, the financial package of the private power projects has to be approved by the Central Electricity Authority which *inter-alia* scrutinises the package including rates of interest on the borrowed capital.

2.63 The Finance Ministry had relaxed the foreign debt equity ratio for private sector power projects from 2:1 to 3:1. Enquired about the reasons for doing this the Ministry of Power stated in a written reply as follows:-

“The policy stipulates that minimum 20% of the total outlay of the project cost should be in the form of equity and as such 4:1 debt equity ratio has been specified as a ceiling. Both debt and equity can contain Indian as well as foreign components. External debt could be either from multilateral lending agencies or from commercial lending agencies or from both these agencies. To put a cap on the commercial external debt, Ministry of Finance has specified the limit of 2:1 for external commercial debt to the foreign equity. As the policy permits 4:1 debt equity ratio and as external debt is cheaper than domestic debt, Ministry of Power has recommended to the Ministry of Finance to relax the ratio as the tariff would be reduced with increase in external debt. Ministry of Finance have agreed to relax the ratio from 2:1 to 3:1 during the consideration of few proposals recently by the FIPB.”

2.64 The Sub-Committee pointed out that to the extent the agreements either promise off-take of power or make arrangements for financial recompense of plant availability - at levels significantly greater than the peak load demand for power, they imply that the existing power generation plants will have to ‘back down’ well beyond present rates, thereby making them inefficient. This alone would significantly increase the average cost of power to the consumer. The Ministry of Power stated in post evidence reply as follows:-

“SEB/State Govt’s decision to hand over a project to private sector would obviously be based on their requirement/availability of power from various sources. Details of the capacity of the plant/targeted PLF required from the plant are matters which are to be decided by the SEB/State Government. Obviously, if their requirement and that of the private entrepreneur find common ground, a power project materializes. GOI policy does not mandate that the SEBs should committ themselves to a very high PLF from the private plant at the cost of their own plants. The GOI tariff



Notification lays down a normative PLF (68.5%) at which the full fixed charges could be recovered. This level has been arrived at on the basis of the experience of thermal power plants in India. In essence, the concept indicates a reasonable level of performance at which fixed costs can be recovered. If the plant operates at a lower PLF there is a pro-rata reduction in the recovery of fixed costs. For generation above this level the SEB can offer an incentive over and above the variable (fuel) costs with an upper ceiling on the incentive rates. Even at the cost of repetition it has to be emphasized that the matters concerning planning and development of power projects are substantially in the hands of States."

2.65 As per the notification dated 18.1.1994 while computing the level of generation by the private producer the extent of backing down as ordered by the REB shall be reckoned as generation achieved. Asked about the justification for this reckoning the Ministry of Power stated in a written reply:—

"This is the standard practice with PSUs as well. Private promoters will not bear the loss of revenue due to backing down owing to temporary and unexpected drop in demand. However, with expected rapid growth in demand and prevailing shortage, this clause will motivate SEBs to make full use of generating capacity. Backing down could also be due to technical factors effecting transmission/distribution for which generator is not responsible."

## D. COUNTER GUARANTEE

2.66 Counter guarantee from the Government of India are given for SEB's payment obligations in respect of private power projects cleared by the Cabinet Committee of Foreign Investment. The Ministry stated that the counter guarantees would be extended on the condition that the SEBs observe certain minimum performance criteria. Only two counter guarantee have been signed so far. These are for Enron's Dabhol Power Project in Maharashtra and AES Transpower's Ib Valley project in Orissa. The salient features of the counter guarantee and the related tripartite agreement between Government of India, Reserve Bank of India and Government of Maharashtra are given below:—

2.67 Salient features of GOI Counter Guarantee to DPC :

(i) **GOI as secondary obligor :**

The GOI's obligation is that of a secondary obligor. The DPC can ask GOI to pay only on the failure of MSEB to pay in

terms of the PPA, and also the failure of the GOM to pay in terms of the GOM guarantee.

**(ii) Duration of this guarantee**

The guarantee is to expire at the earliest of several specified events, for example, 12 years or when no sum remains outstanding to the foreign lenders. There is also a stipulation that the promoters will maintain a specified minimum equity during construction, and during commercial operation.

**(iii) Financial limitations :**

The guarantee provides a limit of GOI liability. This shall not exceed Rs. 1500 crores in a financial year subject to suitable adjustments on account of inflation, change in taxation and rupee devaluation.

**(iv) Termination payment :**

In case of termination of the PPA by the DPC, the GOI's liability under the guarantee will be limited to only outstanding foreign debt, even though the MSEB's liability under the PPA and GOM's liability under their guarantee is larger.

**(v) Guarantor's right to direct supply of energy :**

As and when any payment is made by the GOI, the GOI acquires right over energy from the power station and can direct its supply till the payments are recovered.

**(vi) For settlement of disputes the clause provides conciliation proceeding as the first mechanism. Only such disputes which are not resolved through conciliation will be referred to Arbitration.**

**2.68 Salient features of tripartite agreement between GOI, GOM and RBI :**

- (i) Guarantee fee will be 1 Re. per annum.
- (ii) any amount paid of GOI under the counter guarantee shall be recovered from GOM with interest of 2% above the RBI's Bank Rate.
- (iii) MSEB will open an irrevocable revolving Letter of Credit for payment liabilities to DPC and also open and maintain an escrow account.

- (iv) GOM to ensure that MSEB will maintain specified performance parameters relating to Rate of Return (ROR), payables/receivables, slippage in which will entail additional guarantee fees, as detailed below :

MSEB to maintain :

\* ROR to be 3% from 1994-95 onwards.

\* Average Receivables/Payables in a year not to exceed 4 months of sales/purchases in 1995-96 and to be brought down to 3 months by March 1998 and onwards.

\* Penalties for slippages will be in the form of increase in the Guarantee Fee of the total Guarantee Limit applicable for the year @ 0.25% for any fall in ROR below 3% and @ 0.25% for any increase of Receivables/Payables above specifies level.

- (v) GOM to authorise GOI to instruct the RBI to debit any amount paid by GOI under the guarantee to the GOM's account with the RBI.
- (vi) GOI to have right to make recovery from State's share of Central Plan assistance, central taxes, central loans and grants.
- (vii) Any liability or loss of the GOI on account of the counter guarantee to be indemnified by GOM.
- (viii) Several legal conditionalities imposed upon the GOM, for example, need for prior GOI's approval for Termination or any changes in the PPA etc.

2.69 When the Sub-Committee undertook study tour to Bombay an official of Dabhol Power Company informed the Sub-Committee that "during the initial phase of the negotiations with MSEB the Dabhol Power Company neither insisted nor expected any guarantee on payment obligations except, may be from Government of Maharashtra. However, following the announcement of the policy of counter guaranteeing on payment of obligations of SEBs announced by the Government of India, the company took advantage of it, particularly owing to the insistence and conditionalities posed by the Bankers."

2.70 A representative of MSEB also stated in this connection during the discussion held at Bombay that the Government of India did not come out with a clear policy statement on the question of "Counter Guarantees". It was also stated that the Dabhol Power Company had initially reconciled to the idea of not having a guarantee

for payments but subsequently took advantage of the policy announcement made by GOI in this regard.

2.71 When asked to comment on DPC's denial regarding counter guarantee, the Ministry of Power stated in a post evidence reply that the matter was taken up with the Company, which has reportedly replied as follows :-

"The statement does not represent the fact. The Dabhol Power Company (DPC) had initially attempted to finance the Dabhol Project without a counter-guarantee.

However, the financial institutions lending money to the Dabhol Power Project have insisted on a counter guarantee for the purpose of financing the project.

Project financing thus requires that the revenues to the project from the sale of power are forthcoming at the right time and in the right amount. This requires a guarantee of payment from the State Electricity Boards but in the present situation where the SEB's are not credit rated and not seen as financially viable in the international financial and capital markets, a counter-guarantee is necessary from the GOI to enable financing."

2.72 Enquired whether any one specifically asked for the Counter-guarantee by GOI, the Secretary, Power stated during evidence :-

"Sir, initially the request for the counter guarantee came for the investors and finally the Central Government gave the counter guarantee to the investor, after the State Governments asked for it. The policy formulation of the Central Government said that Central Government may consider giving counter guarantee if so requested by a State Government on terms to be negotiated between the Central Government and the State Government."

2.73 Asked to furnish documentary evidence, if any, with regard to request of foreign/Pvt. investor for counter-guarantee from the GOI, the Ministry of Power stated in a written reply as follows :-

"Government of India considers counter guarantee only on such proposals being made by the investors/State Governments and not *suo moto*. Counter guarantee is considered based on such documents.

In the absence of any international credit rating of our SEBs/State Governments and given investors/lenders perception of country risk in investing in India, and in line with system of sovereign

guarantees in some form or the other being offered by other Asian countries like China, Pakistan, Philippines & Indonesia, the first lot of investors have been looking for some kind of performance undertaking by the GOI.

More than the documentary evidence, it is the direct interaction by the international lenders and the prospective investors (both foreign and Indian) with the GOI officials in India and during the visits of delegations abroad which has highlighted the necessity of GOI counter guarantee at least for few initial projects to give boost to the policy."

2.74 The Ministry of Power informed the Sub-Committee that GOI Counter Guarantee has been envisaged only as a transitional measure and limited to 8 initial projects cleared from foreign investment angle. The Ministry of Power has reportedly been considering several alternatives to Counter Guarantee. The Ministry has moved a proposal for consideration of the CCFI seeking CCFI's approval to all the alternatives in principle and leave it to the States/SEBs/Developers/Market to choose the best option. Alternatives suggested by Ministry of Power are :-

- (a) Direct supply of power by IPPS to HT consumers.
- (b) Opening of an Escrow account in which identified payments by consumers are credited and the payment liability to the IPP is a first charge on this account.
- (c) Escrow with F1 counter guarantees.
- (d) The blended counter guarantee.
- (e) PPA with Powergrid Corporation.
- (f) Linking power generation with distribution.
- (g) Escrow arrangement with Central devolution also committed to such an account, backed up by State Government guarantee and in default of the latter.
- (h) World Bank guarantee.

2.75 The Ministry of Power has stated further that the alternatives to counter guarantee offer limited and temporary solution. The only long term solution is making the SEBs viable. There is some progress in this direction and as against 51% PLF in 91-92 the average PLF in 93-94 was 61%. Similarly, only 5 out of 17 SEBs had a positive return during 91-92. During 93-94 this number is 12.

2.76. Asked about the rationale for restricting counter guarantee only to a few projects, the Power Secretary stated during evidence:-

"Sir, when we considered this aspect, we thought that this should not expose the Central Government and the Indian economy as a whole to a very large contingent liability. We thought that the contingent liability will be of the order of payment for one year. The multilateral agencies which have chosen India for investment purposes said that when we are giving counter guarantee for one project, the contingent liability will be calculated on the basis of the payment for the entire project period. It meant that at one stroke we would get a very large exposure. So we decided not to give counter guarantees."

2.77 The Ministry of Power stated in this connection in a written reply as follows :-

"The counter guarantee is a transitional measure to instill among the investors and lenders a sense of comfort about security of their investment in the form of payment by the SEBs for the power purchase. Essentially the private power projects have to stand as commercial agreements between the developer on the one hand the power purchaser on the other. The private power policy can proceed on a sustainable basis only on the financial strength and the paying capability of the SEB. It is expected that with the initial projects taking off successfully and with parallel demonstrable improvement in the SEBs, the investors would have enough faith in investing in the Indian power sector without the crutches of GOI counter guarantee."

2.78 Regarding the question of counter guarantee, the Finance Secretary stated in evidence:-

"Since it is a controversial matter in the Press and in the public, I would like to put before the Committee that a case can be made for counter guarantee for the initial projects even though we in the Finance Ministry have had some reservations on this as a long term route."

The witness further added :-

"The Ministry of Finance is taking a tough line. We will not approve any counter guarantee unless certain criteria are fulfilled. In principle, counter-guarantee will be provided on certain criteria approved by the Cabinet. The criteria are that fundamental requirements should be met; the cost are certified to be reasonable;

they cannot revise it in the middle; and they take the risk of the projects being completed."

2.79 Under the counter guarantees being offered to private promoters any default in payment by State Governments is sought to be adjusted from State's share of Central Plan assistance, Central taxes, Central loans and grants. Enquired whether the Government examined the question of its likely impact on the economic activity of the State concerned and the problems likely to arise on the Centre-State relationship the Ministry of Power stated in a written reply as follows :-

"The legality of the adjustment through the plan allocation was examined by the Ministry of Legal Affairs. While signing the counter guarantee agreement for the Dabhol agreement DEA further examined the likely impact in all its implications. Moreover, if one examines the dues of important central power utilities like NTPC/ NHPC and realisation of these dues from the SEBs, it would appear that most of the SEBs are having a good paying capacity. Therefore, in practice, the counter guarantee by GOI would never perhaps, need to be invoked."

2.80 The World Bank had reportedly expressed a view that the grant of counter guarantee may delay the reform process of the SEBs. Reacting to this point, the Ministry of Power stated in a note that "the World Bank has been assured that this mechanism would actually trigger and hasten the SEB reforms. The counter guarantee would be extended on the condition that the SEBs observe certain minimum performance criteria. The guarantee is proposed not to bypass but to bolster the issue of SEBs achieving financial viability."

2.81 The Sub-Committee observed from the press-reports that the World Bank had indicated its willingness to provide guarantees to international lenders investing in IPPs with a view to accelerating power sector development in India. Asked about the factual position in this regard, the Ministry of Power stated as under :-

"The Expanded co-financing Operations (ECO) Programme which currently guides World Bank guarantee operations, has been broadened in 1991 to enable guarantees to support private commercial financing for private sector projects. The World Bank has acknowledged the fact that as financing needs for development of infrastructure are likely to be vary well beyond the capacity of official sources along to support a broader use of World Bank guarantees would be necessary to promote infrastructural projects in this private sector. Such guarantees by the Bank could in turn

be backed up by suitable arrangements with GOI for ensuring sustainability of these projects and minimising the perceived risks of the foreign lenders. Such an arrangement could be explored further.”

2.82 Enquired whether the Government explored the possibility of getting World Bank guarantee to international lenders investing in IPPs. The Finance Secretary stated during evidence:-

“They will only do it if the State Electricity Boards first accept certain conditions of which the Bank would regard as the immediate requirement for financial viability.....But to my knowledge the State Electricity Boards would not be willing to do what the World Bank regards as necessary steps for financial viability. The World Bank will not accept subsidies and recompensation for losses. For example the World Bank will say it is a bad policy to have very low tariff on one sector and off set it by a high tariff on the other because this distorts tariff.”

## **E. ROLE OF STATE ELECTRICITY BOARDS**

2.83 The private power development could effectively take off only if the finance off SEBs improve. According to the Ministry of Power SEB's financial position and ability to stick to the payment obligation leave much to be desired. The net result of the above phenomenon is that SEBs have lost their credibility in the market.

2.84 The critical problem area in the power sector is the poor performance of SEBs which generate and distribute power, set tariffs and collect revenues. The details regarding financial performance of the state power sector as observed from the Economic Survey is given below :-



### Financial Performance of the State Power Sector

	1991-92	1992-93	1993-94 (Pre- Actual) (Rs. Crore)	1994-95 (RE)	1995-96 (AP)
<b>A. Gross Subsidy involved</b>					
(i) On account of sale of Electricity to :					
(a) Agriculture	5938	7205	8888	10113	11178
(b) Domestic	1310	1919	2420	2963	3492
(c) Inter-State Sales	201	226	138	232	330
Total	7449	9350	11446	13308	15000
(ii) Subventions Received from State Governments	2045	1911	2068	1831	1693
(iii) Net Subsidy	5404	7439	9378	11477	13307
(iv) Surplus Generated by sale to other sectors	2173	3312	3502	5308	5941
(v) Uncovered Subsidy	3231	4127	5876	6169	7366
<b>B. Commercial Losses*</b>	4117	4358	4995	6332	7130
<b>C. Revenue Mobilisation</b>					
(i) Rate of Return (ROR)%	-12.7	-11.8	-12.2	-13.5	-13.5
(ii) Additional Revenue Mobilisable from Achieving					
(a) 23 percent ROR	4959	5462	6221	7737	8715
(b) From Introducing 50 paise/unit from Agricultural/Irrigation.	2176	2159	2223	2017	1927

RE : Revised Estimates. AP : Annual Plan Projections.

\* Commercial losses are different from uncovered subsidy because they include financial-result of other activities undertaken by the SEBs.

2.85 It is observed from the Economic Survey that the commercial losses of SEBs in absolute terms have increased from about Rs. 4100 crores in 1991-92 to about Rs. 6300 crore in 1994-95 (RE) and is projected to increase further to about Rs. 7100 crore in 1995-96. It has been stated that the level of commercial loss of the SEBs bears a direct relationship with the subsidies provided to the agricultural and

domestic sectors and the cross subsidisation from the industrial and commercial sectors.

2.86 The hidden subsidy for agriculture and domestic sectors has increased from Rs. 7439 crore in 1992-93 to Rs. 11,477 crore in 1994-95 (RE) and is projected to further go up to Rs. 13,307 crore in 1995-96.

2.87 Apart from extensive cross-subsidies involved in the prevailing power tariff structures, the SEBs have continued to suffer from sub-optimal capacity utilisation of thermal generation units and high transmission and distribution (T & D) losses. These T&D losses have remained between 21 and 23 per cent, as against an international average of less than 10 per cent. These are due to sparsely distributed loads over a large area, particularly in the rural sector, under-investment in the transmission system, inadequate billing and substantial pilferage of power. Losses can be brought down through system improvement schemes which are being undertaken by SEBs.

2.88 Restoration of financial health of SEBs and improvement in their operational performance remain the most crucial issues today in the power sector.

2.89 The major conclusions of the Planning Commission that emerged from the analysis of SEBs as contained in the Annual Report on SEBs are given below :-

"While the electricity utilities in the country have no doubt made significant progress during the last decade in improving their operational performance, it is a matter of concern that many thermal power stations continue to operate at sub-optimal levels of capacity utilisation and the investments in R & M schemes continue to be inadequate. Financial constraints of the utilities have also led to shortfalls in investments on T & D facilities and other critical schemes. This in turn has led to high T & D losses, poor quality of electricity supply and consumer dissatisfaction. More important is the fact that these shortfalls in investment have further eroded the financial viability of the utilities. The financial ill-health of the utilities has also adversely affected the operations of many PSUs with whom the utilities have day-to-day interaction. On the financial side, the cost of generation and supply of electricity has been on the increase. The major elements of cost escalation are increased expenditure on fuel, establishment, purchase of power and interest payable on loans. There is scope for rationalisation and redeployment of the staff in many utilities. In the recent years, most of the SEBs have revised their tariff. However, these tariff increases have hardly kept pace with the increase in the costs leading to a steady erosion of their finances. Most of the

utilities are presently generating negative internal resources, have negative rates of return and increasing commercial losses.

Tariff rationalisation as well as improvements in operational efficiency need to be pursued at the same time. These measures alone may not fully restore the financial health of the utilities as there is need to bring about an all round improvement in the billing and collection system, cost control efforts, optimum management of human and other resources etc. This may call for a careful review of the existing organisational structure of the utilities."

2.90 In terms of Section 59 of the Electricity Supply Act, 1948 the SEBs are required to earn a minimum rate of return of 3% on their net fixed assets in service after providing for depreciation and interest charges. The State Government's could prescribe a higher return if considered necessary. This provision was to become operative from the accounting year of 1985. However, the SEBs are yet to comply with this statutory stipulation. In actual practice SEBs as a whole have been incurring heavy losses and are often short of funds crucial for maintenance and renovation of power plants and strengthening of transmission net work. Revenue realisation from the sale of electricity, in most cases, does not even cover their revenue expenditure requirements. The rate of return (ROR) on capital remains about (-) 13%.

2.91 Most of the State Governments do not compensate the SEBs for the subsidised sales of electricity to agricultural and domestic sectors. In 1994-95 only 7 State Governments have proposals to give subvention to their SEBs, totalling a sum of Rs. 2050 crore. Some of the State Governments write off the interest payable to them in lieu of subsidised sales to agricultural and domestic sector.

2.92 When it was pointed out that SEBs are sick partly because of Government not giving subvention to SEBs the Secretary, Power stated:-

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"That is why this issue (SEB reform) has been referred to a sub-committee of the National Development Council. Hopefully, if those recommendations come and if they receive consensus, we can act upon them. We have made some beginning towards SEB reform.

Almost 18 States and Union Territories have agreed to fix the tariff at the minimum of 50 paise; 12 SEBs have signed their operational and financial action plan with the Power Finance Corporation. I am not being optimistic, but hopefully at the end

of this process we will have a better functioning system than we have now."

2.93 Asked about the question of reimbursing subsidy to SEBs by State Governments, the Secretary, Power stated:-

"My response is very clear. If the State Government, for reasons best known to it, decide that a particular set of consumers should get subsidy and that cost of subsidy should not be borne by the State Electricity Board, there should be a transparent provision in the Budget."

2.94 It is observed from the "Power Sector at a Glance" brought out by Central Electricity Authority that there are in all 32 SEBs/ Electricity Departments in the country.

2.95 Emphasising the need for restructuring SEBs, Shri Ashok Rao stated that unless the financial viability of the SEBs is ensured the Indian Power Industry is bound to collapse. It is essential that SEBs are financially restructured and part of the State Government loans are converted into equity.

2.96 On the question of restructuring SEBs, the Assam State Electricity Board in a written reply suggested :-

"The structure of management in the SEBs particularly its commercial aspects require to be totally overhauled and management has to be entrusted to professionals with stated goals and clearly defined accountability. Boards would need to freeze in employment, large scale re-deployment and readjustment in the work force at all levels."

2.97 Various organisations and experts from whom Memoranda received were all of one view and emphasised that SEBs need to be brought on commercial principles. Some suggested that SEBs may have to be turned into Public Limited Companies.

2.98 Federation of Indian Chambers of Commerce & Industry in its memorandum made the following suggestions :-

- SEBs should be converted into companies under the Companies Act.
- The government share holding should be diluted to 49% giving more autonomy to SEBs.
- An element of competition between SEBs should be introduced. A reputed Credit Rating Agency should be asked to rate the

SEBs. Such rating would help the suppliers of power to the SEBs gauge the ability of the SEBs to make payments on time.

- Overstaffing at SEBs should be checked, while simultaneously inducting professionals.
- Each generating station's working should be analysed and individual plant betterment programmes evolved by dedicated task forces.
- Industry must be encouraged to set up power plants based on conventional fuels or non-conventional sources or co-generation wherever they find viable locations and feed the power into the grid.
- No sales tax should be levied on the diesel consumed by the captive generation sets.

2.99 Pointing out that SEBs have done a magnificent work. Shri Tata Rao, Former Chairman, Andhra Pradesh State Electricity Board stated in a Memorandum :-

"The SEBs have done magnificent work in taking supply to the remotest areas and in energising over 10 million pumpsets in the country but in the process they are only receiving brickbats instead of bouquets. If only the SEBs are fully compensated for all the losses on account of the loss making rural electrification and lift irrigation programmes and if the States had not interfered in formulating the tariffs the position of the SEBs would have been different altogether. The internal resources of quite a few of the SEBs along with some borrowing from the FIs would have enabled them to provide the required capital for the financing of generation, transmission & distribution programmes."

2.100 According to Dr. Tata Rao the immediate task should be reorganisation of SEBs by breaking up the existing SEBs into :

- (i) State Power Generation Corporations to look after power generation and transmission.
- (ii) Urban Area Power Supply Corporations.
- (iii) State Rural Electrification Corporations.

2.101 Asked about the Ministry of Power's reaction to the suggestion for segregation of SEB activities into generation, transmission

and distribution as independent divisions/entities, the Ministry of Power stated as under :-

"At the national level, power generation, transmission and rural electrification already have been segregated into independent entities through the creation of power generating corporations like NTPC, NHPC, NEEPCO etc.; a separate company *viz.*, POWERGRID to look after transmission aspects and the REC for rural electrification. Some of the states already have gone in for separate power generating corporations e.g. WBPDC, KTCL, TVNL GPCL etc. Urban distribution has also been segregated in certain urban areas like Calcutta, Ahmedabad, Bombay, Noida etc. Therefore, as the volume of activity increases over the years, it would be advisable for the SEBs to keep this option in mind."

2.102 Asked what attempts had been made by the Government in the past to improve the performance of SEBs and to what extent the centre succeed, the Ministry of Power stated in a written reply that there is visible improvement in the performance of SEBs in recent years, thanks to the efforts made by the Central Government and furnished the following facts :-

**(i) Plant Availability and Capacity Utilisation**

The All-India plant availability of thermal units in the country increased from 71.7% in 1990-91 to 76.8% in 1992-93. The average PLF increased from 53.8% in 1990-91 to 61% in 1993-94. In the case of the State Sector, the PLF which was 51.3% in 1990-91 has gone up to 56.6% in 1993-94.

**(ii) Reduction in Transmission and Distribution Loss**

The T&D loss for all regions put together was 21.09% in 1989-90 which has been brought down to 20.54% in 1992-93.

**(iii) Rate of Return (ROR) achieved against 3% Statutory Surplus**

While 13 out of the 17 SEBs which had registered negative ROR in 1986 (and only one SEB had shown and ROR over the minimum statutory surplus of 3%), the position in 1993 has considerably improved. Only 5 SEBs have now negative ROR and as many as 9 States have an ROR of above 3%.

2.103 It is observed from CEA's "Power at a Glance" May, 1995 that the All India T&D loss in 1989-90 was 23.28% and in 1992-93 it was 21.80%. As regard to ROR (with subsidy) the Annual Report on the Working of SEBs and EDs (Feb., 1994) shows that in 1993-94 (RE) out of 19 SEBs 8 have registered negative ROR and only one has on ROR of 3%.

2.104 According to the Ministry of Power, the recent mid-term review of the Planning Commission has recognised that the internal resources position of the SEBs has shown considerable improvement than what was expected at the beginning of the 8th Five Year Plan, since a number of SEBs who had not programmed for tariff revision have since carried out periodical tariff revisions.

2.105 The Ministry of Power stated that it is beyond doubt that the SEBs need to be subjected to structural reform. Any investment initiative in the private sector would be successful only if there is sectoral reform which basically revolves round the SEBs. The NDC Committee on Power has examined this major issue and the recommendations of the Committee are expected to have significant impact on the reform process. Meanwhile, 6 SEBs are undergoing reform studies by international consultants, which are being funded by the World Bank. (Recently, REC has also held a Seminar on Decentralised Distribution System with particular reference to the rural areas). The process of reform has thus been set in motion and will have to be implemented in the coming years. According to Ministry of Power no definite time limit can be specified for the process though it cannot wait beyond the 8th Plan period.

2.106 Asked about the progress in regard to reform studies by SEBs, the Ministry of Power stated that the State of Orissa, Haryana, Rajasthan, UP, Bihar and Andhra Pradesh have agreed to subject themselves to diagnostic steps for restructuring of their power industry. Consultants have already been appointed in Haryana, Orissa, Rajasthan and UP and the exercise has been initiated in Rajasthan. Draft reports have been received on Haryana and Orissa and is expected shortly in the case of UP. In Orissa, the State Government has also taken a view on the draft report and already initiated the process of restructuring its State Electricity Board and hence set up separate corporations for transmission and for hydro power. It has also proposed a draft bill for setting up of a regulatory body. In Haryana also similar suggestion as for Orissa have been made by the Consultants and as a first step the State has recently revised the tariff upwards by about 20%.

2.107 The West Bengal State Government informed the Sub-Committee in a written reply that it proposed to study the entire pattern of generation and distribution in the State so as to rationalise the functions of the various agencies involved in generation and distribution. The State Government proposed to get the system studied by a reputed consultant and examine the suggestions.

2.108 The Ministry of Power stated that as per the assessment made by the World Bank, once the Reforming States decide to go in for restructuring processes, as the studies are aimed at, it would promote corporatisation of generation, transmission and distribution of power; align tariffs with costs of supply ; foster competition where possible and implement regulation where not ; effect bold state level reforms to encourage commercialization of the sector ; and put in place financial and accounting improvements to manage the fiscal impact of the reform.

2.109 Enquired whether Government considered the question of privatising SEBs, the Ministry of Power stated that there is no proposal on the part of Central Government for privatising the SEBs. SEBs are under the control of the State Governments and any decision in this regard will have to be taken by them. However, the experiment being carried out by UPSEB for privatising distribution in the NOIDA is relevant and is being keenly watched for its success. It is expected that the NDC Committee report also will give certain positive recommendations regarding dilution of equity in SEBs.

2.110 According to press reports, the Meghalaya State Government has abolished its Electricity Board and has handed over power generation to a foreign consortium of three companies and transmission and distribution to a UK based power concern. A new commission by the name of Meghalaya Electric Regulatory Commission would reportedly be formed, to control, monitor power generation and distribution in the state.

## **F. POWER PURCHASE AGREEMENT**

2.112 Power Purchase Agreement (PPA) is basically a commercial contractual agreement between the State Electricity Board (SEB) and the generating company. It guarantees a market and a corresponding revenue stream for the power to be produced by the project. It defines the rights and obligations of the project developer and SEB during the development, construction and operation phases of the useful life of a privately owned power plant. It allocates the risks associated with a power project, including fuel prices and other operating costs, financing costs, construction cost and various performance factors.

2.113 The PPA defines the service that the project developer and the power plant will provide the SEB through several provisions, including :-



- (i) technical description of the power plant, performance standards, quality of power to be produced, detailed specification of fuel, environmental responsibilities,
- (ii) term of the PPA, including the provision of extension, early termination, transfer of the project at the end of the PPA term,
- (iii) The O&M procedures, metering arrangement, payment and billing terms, protection equipment, personnel and safety requirements, operating records, performance level, spare parts,
- (iv) Energy price, O&M costs, penalty and bonus terms, third party sales,
- (v) milestones for progress of construction, construction monitoring by SEB,
- (vi) force majeure provisions, labour disputes, regulatory changes, dispute resolution, modification or amendments, governing law, termination and buyout provisions, etc.

2.114 Enquired whether the Central Government issued any guideline regarding PPA, the Ministry of Power informed in October 1994 that it has not issued any guidelines to the State Govts./SEBs regarding PPA. The Ministry of Power however reported to have issued guidelines in this regard subsequently.

2.115 To a query whether any attempt has been made to standardize PPAs, the Ministry of Power stated in a written reply:-

“Since the PPAs would be project specific and will be a product of negotiations between SEBs and generating company, standardization of the PPAs is not desirable. As guidelines have been issued, it is felt that uniformity could be achieved on the factors common to PPAs. Moreover, we are trying to set that scrutiny of PPAs should be made a part of the techno-economic appraisal. Instructions in this regard are likely to issue soon.”

2.116 The Sub-Committee observed from press reports that the Ministry of Finance had advised the State Govts./SEBs to refer to a World Bank funded report submitted by Vanguard Capital while drafting and finalising PPAs. Enquired about the report, the Finance Secretary stated during evidence:-

“Vanguard Capital were assisting the Maharashtra State Electricity Board when they were negotiating with ENRON people for the Dabhol Power Project. So they have the experience on the Indian

side. In fact on the side of a State Government. After looking some possibilities, we asked these people to prepare a report which outlines the general principles which should be there for a PPA. They have produced a report. We have sent that report to the Ministry of Power and to all the Chief Secretaries. So this is a group that has not been knowledgeable of the Maharashtra State side of the MSEB and Dabhol Project. They have some international experience. The World Bank felt that they were reasonably experienced. We have asked them to lay down what is the kind of thing that a good PPA should have from the Indian side. We have offered it to everybody. We told them, "If you have any problem, please let us know and give us the comments. But we are not in a position to assert whether this is the best way of doing it or not."

2.117 Regarding standardisation of PPA, the Finance Secretary, stated as under :

"It will be very useful to standardise PPAs. This has to be done by the Ministry of Power because they are the Ministry concerned. I would mention only one thing. The problem is that each project is a little bit different. So whether they prepare a model PPA or a standardised PPA, I do not know but in practice, we are using this report as a guide in our negotiation."

2.118 The confidentiality of PPAs sparked intense debate in the media and in various other forums and there was widespread perception of biased contracts. Asked why the Govt. should not issue guidelines to make PPAs public, the Ministry of Power in a post evidence reply stated :

"PPA is basically a commercial contractual agreement between the SEB and the generating company. In case of PPA for the GTEC project a confidentiality clause has been inserted viz., 'Each of the Parties shall hold in confidence the agreements relating to the Power Station and all documents and other information whether technical or commercial which is of a confidential nature supplied to it by or on behalf of the other party relating to the design, construction, insurance, operation, maintenance, management and financing of the project and shall not save as required by law or appropriate regulatory authorities: or to prospective lenders to, or investors in, GTEC or to the professional advisers, of the parties here to or of such lenders or investors as aforesaid publish or otherwise disclose or use the same for its own purposes otherwise than as may be required to perform its obligations under this Agreement'.

Similar clauses are being found in some of the other PPAs. It is appreciated that the SEB being an organ of the State Government should show transparency in their dealings and the PPAs should be made public documents.

The tariff notification guides the principles of determination of tariff in the PPAs. The Government has also circulated detailed guidelines to the State Governments/SEBs for negotiating PPAs. As such, it is expected that the future PPAs may not have confidentiality clauses. The government is also examining whether it can direct that the SEBs/State Governments should make all the PPAs public documents with the exception of any confidential data contained in the PPA."

2.119 To a query whether the projects approved so far have adhered to the guidelines under the policy, the Ministry of Power stated that the projects approved have not generally deviated from the policy, except some of them in the case of tariff formulation. In the detailed pricing arrangements as per the Power Purchase Agreements the parties have in certain cases adopted certain deviations from the two-part tariff notification. These deviations broadly revolve around the following :-

- (a) Indexing the Return on Equity (ROE) above 16% to foreign exchange. At present this is permitted only upto 16% ROE.
- (b) Actual insurance as a pass through over and above normative O & M.
- (c) Deviation regarding rates of depreciation.
- (d) Return on equity even during construction.
- (e) Deviations in the incentive rate.
- (f) Deviations from the pro-rata reduction in recover of fixed charges for generation below 68.5%.
- (g) Tariff based on a structure different from the two part tariff notification.

2.120 The Ministry of Power stated in this connection that based on the experience gained the Central Government has now provided that a tariff structure which is in deviation from the norms and parameters laid down in the Tariff Notification, can also be adopted, provided the *per-unit-cost does not exceed what would be payable under the Tariff Notification*. This would, in effect, mean that the SEBs could negotiate a more favourable tariff rate than what is provided for in

the Tariff Notification. This has reportedly provided considerable flexibility to both the investors as well as to the SEBs.

2.121 The Sub-Committee desired to know the actual tariff determined in respect of projects for which PPAs have been signed so far. In reply, the Ministry of Power stated that the PPAs do not indicate the actual tariff that would be charged by the company as the tariff is a function of completed costs. The PPAs firm up the principle of tariff computation as per the Notification issued by Government of India or deviations if permitted. However, a list indicating tentative levelised tariff for the projects cleared techno economically by CEA and in which counter guarantee has been signed is given below as furnished by Ministry of Power :-

Sl. No.	Name of the Project	Levelised tariff at 68.5% PLF
(i)	Dabhol CCGT Phase-I	Rs. 2.85 per kw/hr
(ii)	Ib Valley TPS	Rs. 2.15 per kw/hr

2.122 The notification of 30th March, 1992 provided that the tariff for sale of electricity by generating company to the Board shall be computed and fixed for a period of five years each on normative basis. This provision was, however, omitted by the Ministry vide notification dated 18th January, 1994. Asked about the reasons for omitting this provision. Ministry of Power in a post evidence reply stated that this amendment was brought about to afford greater flexibility to the States in negotiating the PPA with private promoters. Prior to this the O & M expenses were allowed fixed escalation annually leading some times to a disadvantage to the SEBs. In the new arrangement the O & M costs would be allowed an escalation based on actual increases.

## G. PROJECT CLEARANCE

2.123 Enquired whether there are any bottlenecks/avoidable time lags in the present arrangement in getting project clearance and completing other requirements, the Dabhol Power Company in a written reply stated that one of the biggest challenges power developers face is getting all the clearance they require for something as complex as a power project. The DPC suggested that the process may be expedited by ensuring that :

- Approvals and clearance needed are minimized.

- A time-bound system for granting approvals exists such that if the government authorities are unable to respond in a specified time period, the clearance is considered automatically granted.
- Co-ordination between different ministries at the Central and State level is improved since this can often result in delays for clearances that require inputs from both.
- Critical ministerial departments reallocate their priorities, especially at the highest levels, because their workload has increased tremendously due to the government's privatization programme.
- Most clearances require coordination between different ministries at the central and state level, which needs improvement. One solution could be the formation of "Project Implementation Committees" consisting of senior state and central government officers, which would meet at regular intervals at New Delhi and the State capitals to review and resolve any difficulties faced by projects.

2.124 The Federation of Indian Chamber of Commerce and Industry pointed out that as many as 17 clearances from various Ministries/ State Govt./Other organisations are required for setting up a thermal Power Plant. After getting these clearances, 12 agreements/contracts are required to be finalised with various agencies. The Sub-Committee in his connection observed that a High Powered Board has been constituted for faster clearances of power projects in the private sector. Asked about the normal time taken by the Board in clearing a project, the Ministry of Power stated in a written reply as under :-

"In the very nature of a private power project, the need of interact with differnt agencies for clearances cannot be avoided. For all the clearances, the onus is on the project authority (i.e. the private company) to file necessary applications, reports with various agencies. The High powered Board primarily does an overall review of broad policy issues. To facilitate speedy clearances of the private power projects an Investment Promotion Cell (IPC) headed by Joint Secretary was formed in the Ministry of Power which acts as a single point reference to the prospective investors. The IPC provides the necessary guidance/information required by the promoters and also closely monitors the progress of the private project proposals with a view to remove the bottlenecks, if any. A Directorate of Private Power Development has been formed in the Central Electricity Authority to facilitate private power investment. NTPC and POWERGRID have established Joint Venture Cell in

the respective organisations to facilitate their participation in private power projects.”

2.125 The time taken by CEA for clearance of six projects as observed from the information furnished by the Ministry of Power was as follows :—

Name of the project	Date of submission of FR	Date of clearance	Time Taken by CEA (Months)
A. Jagrupadu GBPP/ Andhra Pradesh	29.7.93	25.11.93	4
B. Godavari GBPP/ Andhra Pradesh	21.1.93 & 4.11.93 (Revised)	3.01.94	12
C. Dabhol CCGI/ Maharashtra	23.4.93 & 11.6.93	26.11.93	7
D. Zero Unit (NLC) Tamil Nadu	Aug., 93	19.8.94	12
E. Ib Valley TPS/ Orissa	1.6.93	19.8.94	14
F. Paguthan GBPP/ Gujarat	15/7/93 & 17.9.93 (Addendum)	25.11.93	4

It can be observed from above that in the case of 3 projects, CEA has taken one year or more to give clearance.

2.126 Asked about the reasons for the delay in giving clearance in respect of the above projects, CEA stated in a written reply:—

“The CEA’s clearance is an interactive process and depends upon various factors such as tying up of inputs/clearance and furnishing of reasonable cost and tentative financial package to CEA. Before the issue of techno-economic clearance, on request from the Companies, in principle clearance is issued to them to facilitate tying up of funds, which takes considerable time. They have to select the turnkey contractor with single point responsibility to meet the requirements of lending agencies before they could come up with reasonable cost estimates for submission to CEA. There was no delay on the part of CEA in issue of techno-economic clearance. In fact all the six private sector schemes were cleared

within one month from the date of tying up essential inputs/ furnishing reasonable completion costs.”

2.127 Asked about the expected date of commercial operation in respect of each of the project cleared by CEA so far. CEA in a written reply stated that the date of commercial operation would be known after the financial closure the projects. The expected time for commercial operation from the date of financial closure for the CEA cleared Private Sector projects is stated to be as below :-

**Commissioning schedule from date of financial closure**

	Ist Unit (months)	Last Unit (months)
(i) Jegurupadu CCGT 216 MW	20	30
(ii) Godavari CCGT 208 MW	18	26
(iii) Paguthan CCGT 665 MW	26	36
(iv) Dabhol CCGT Phase-I 695 MW (net)	39	—
Phase-II 1320 MW (net)	N.A.	—
(v) Ib Valley Units 3 & 4 2 × 210 MW	37	41
(vi) Nayveli Zero Unit 1 × 250 MW	38	—
(vii) Balagarh TPS 2 × 250 MW	38	42
(viii) Bhadravati TPS 2 × 536 MW	42	48

2.128 The Dabhol Power Company is the only one which is stated to have achieved financial closure on 1-3-1995.

## H. REGULATORY COMMISSION

2.129 The restructuring and reform process which the Indian Power Sector is poised for cannot sustain unless there is a regulatory mechanism governed by its independence supplemented with openness, clear accountabilities and adequate information availability.

2.130 The Power Grid Corporation of India in a written reply stated that there is a need for establishment of an independent regulatory body for power sector on the line of Federal Energy Regulatory Commission (FERC), USA, which could regulate Private, State and Central generating, transmission and distribution projects ; endoresement of bulk power and transmission tarrifs; establishment of standards and inspection, and audit of compliance of such laid down statutory provisions besides playing a catalytic role in planning of the Indian Power System at Apex level.

2.131 Similar views were also expressed by various experts/organisations including Dr. Tata Rao, Shri A.K. Shah, Tata Energy Research Institute and the Chairman, Assam State Electricity Board.

2.132 Tata Rao, former Chairman of APSEB stated in this connection that as a matter of fact such a Regulatory Commission should have been created along with the announcement about the privatisation of the power sector. However, instead of creating a Regulatory Agency we are still depending on purely Govt. agencies staffed entirely by Govt. servants to put the stamp of approval for the capital costs and the indicated tariffs.

2.133 In the context of doubts regarding inflated investment costs of pvt. power projects, the expert suggested that :-

“This doubt needs to be eliminated by subjecting these estimates to the scrutiny of a high power committee or preferably a Regulatory Commission not only to look into the capital costs but also to look into the tariffs.”

He emphasized that the so called tariff committees which the Centre is thinking of setting up will not serve the purpose in view. There should be only one Regulatory Commission for the Country with branches in each region.

2.134 Dr. Tata Rao when appeared before the Sub-Committee stated :

“When I say regulatory commission, it means a committee consisting of public figures. It can also include lawyers, technical experts and financial experts to see whether the expenditure being incurred on the capital side or on the operation and maintenance side is justified.”

2.135 Suggesting that CEA may be restructured into an autonomous regulatory body, the PGCIL stated:-

“Keeping in view the fact that CEA has been playing a key role in planning of the Indian power system and is fully equipped with



knowledge and expertise about the sector, it will be only appropriate to restructure it into an autonomous regulatory body. This will require provision of an independent funding mechanism possible by an appropriate levy on regulated entities and having ability to independently recruit and administer staff and to procure facilities and technical assistance to carry out its functions."

2.136 In a written reply furnished to the Sub-Committee, CEA stated that it has necessary talents and expertise to look into the cost studies of private sector projects and also has necessary regulatory power under ES Act, 1948 to regulate the power industry to ensure its satisfactory operation even in the new dispensation.

2.137 Pointing out that emphasis has been laid by many experts on the need for establishment of an independent regulatory body for power sector on the lines of similar organisations in countries like USA, the Sub-Committee desired to know whether this suggestion has been considered by the Government. In reply the Ministry of Power stated :-

"In India, the Central Electricity Authority, constituted under section 3 of the Electricity (Supply) Act, 1948, acts as the chief regulatory body. It is charged with the responsibility of developing a sound, adequate and uniform national power policy, in relation to the control and utilisation of national power resources. Every scheme, estimated to involve a capital expenditure exceeding Rupees one hundred crores is submitted to the CEA for concurrence. The CEA records its concurrence only after it satisfied that the scheme is techno-economically viable. Apart from this, the day to day control on generation and transmission is kept through the Regional Electricity Boards. Similarly in the States the State Electricity Boards/Electricity departments act as regulatory bodies in the power sector. This existing system has been working quite effectively so far. However, there is room for improvement and the Government is open to new concepts."

2.138 The Sub-Committee drew the attention of Ministry of Power to the opinion of experts that CEA being a Govt. body cannot efficiently undertake the task of monitoring and regulating the private power projects and that opening of private sectors should have been preceded by the creation of Central Regulatory Commission with financial, legal and technical experts besides consumers as members to examine and clear the capital and O & M expenses as well as tariffs that may be introduced from time to time.

2.139 Asked about Government's thinking in this regard, the Ministry of Power explained as under:-

"Having an arrangement somewhat different from what exists today has certainly become an issue now that more private generation projects are coming up. CEA had been assigned a role in a situation where more generation was in the public sector and it has discharged this role well. For meeting the changing situation, it is proposed to review the legal and other framework within which CEA is required to operate today and vest in it adequate powers as well as give it a new role consistent with the growing presence of the private sector in the field of power. Also the Ministry has in mind setting up of a Tariff Commission at the Central level and in the regions which would have the responsibility to advise and suggest bulk tariffs to be charged by each State Government. Such bodies would take care of the consumer interest also as well as ensure that the developers and utilities get a fair return for their investment and efforts. Whether such legal powers can be entrusted in these bodies is a matter under examination in the Ministry of Power. For the time being, it is not proposed to set up a Regulatory Commission at the Centre and the Ministry of Power would instead, go ahead by orienting CEA to discharge this function. In any case, at the State level where reform studies have been completed, *i.e.*, in Orissa and Haryana, the Consultants have proposed setting up of such regulatory bodies and a draft bill to this effect has also been received by us from the Government of Orissa which is currently under examination in the Ministry of Power."

2.140 The Finance Secretary stated in this connection during oral evidence as follows :-

"Well, I would not like to comment on CEA's functioning, but the regulatory authority in our system would have to be at the State level. The key functioning of the regulatory authority would be to set the tariff. I believe that if you want the State Electricity Boards to start functioning in a commercially viable manner, then we should move towards an independent regulatory authority."

### III. FUEL POLICY

3.1 Success of the power policy depends largely on an integrated fuel policy. Fuel policy has a number of varied elements to be addressed.

3.2 The Ministry of Power stated that emphasis on coal based generation has been laid on the basis of availability of abundant coal sources in India. Gas based power stations were added depending upon the availability of gas for power generation from the various gas companies. As the availability of better quality of coal is limited and is required for steel and other infrastructure industries, use of low grade coal for power generation has been emphasized by the Government of India.

3.3 Coal availability being limited to the Eastern region and Central India, priority was given to the installation of large capacity power stations near pit-heads and transportation of power through HVDC lines with a view to reduction in transportation cost and other bottlenecks and related economics of power generation. However, depending upon the need for power at load centers, transportation of coal to distant locations is envisaged through railway network or ships. In order to reduce the cost of beneficiation of coal is also contemplated.

3.4 According to Ministry of Power for power stations located at long distance from coal fields, use of gas for power generation would be economical if gas is available. Since the indigenous gas availability is limited, import of gas for power generation is being considered. Where coal transportation is not techno-economically viable, import of coal in a limited way may be prudent. The interests of the indigenous coal industry would, however, also have to be safeguarded.

3.5 The Sub-Committee desired to know whether it is not desirable to demarcate the areas/States which should rely on hydro power development, coal based thermal power plants and gas based power plants in order to optimise resources and avoid cross country movement of fuel. Replying in negative, the Ministry of Power stated in a written reply as under:-

"The Power resources are unevenly distributed throughout the country. The optimal harnessing of these scarce power resources require a proper share of hydro and thermal (both coal and gas based) power plants in each power system from the operational and technical point of view. Even the States rich in hydro power need thermal generation for meeting their base (or continuous)

demand and also to take care of vagaries of monsoon from time to time.

Various other factors influencing the setting up of power plants are demand for power, availability of land, cooling water, environmental considerations, reliability, undesirability of concentration of power plants in a particular area from operation and security point of view, availability of financial resources, avoiding regional imbalances and the relative economics of transmission of power *vis-a-vis* transportation of fuel etc. However, the present policy does include consideration of locating power stations near to coal fields and gas reserves to the extent possible.

The present power planning exercise aims towards evolving the least cost option while taking the above features into consideration."

3.6 With regard to Fuel Policy, Shri K. Ashok Rao in a Memorandum stated:-

"Petroleum products and Natural Gas are the most suitable feed stock for both fertilisers and petrochemicals. Considering the large population of India and the economic dependence of the population on agriculture/food as well as the need for petrochemicals, the use of these fuels for combustion for deriving secondary electrical energy is questionable. The argument that it is cheaper to import fertilisers and petrochemicals, whereas, electrical power cannot be imported is a very short sighted argument and militates against consideration of both self-reliance and national security.

Coal is the main stay of the Indian fuel/energy balance. Indian coal is high ash coal on the negative side and low sulphur coal on the positive side. Two national priority projects should be taken up. These are (i) Washing of non coking coal, and (ii) Coal Gasification (including instituted gasification). In both these areas there has been enough R & D and pilot level plants but they are languishing for want of support. This and this alone can be the long term solution of India's fuel problem.

The short and medium term solution can be the development of hydro power. In this area none of the foreign investors would be interested in projects that involve (i) tunnelling (ii) ecological problems, and (iii) resettlement and rehabilitation problems. Therefore, except marginally in schemes like run of the river schemes etc. foreign investors and their Indian fronts would not be interested in hydro power. Hydro power development in India

will essentially have to be in the Public Sector with public investments."

3.7 Indicating that hydel power is one of the elements of fuel policy, the Power Secretary stated :-

"We see a need to increase the hydro-thermal mix to meet the peak and off-peak demands more efficiently and more optimally. We are struggling hard to locate more projects at suitable sites. We are planning to set up joint ventures. We have gone along the route. It is our objective to see that the hydel share of the total power mix increases."

3.8 In a note submitted to the Sub-Committee, the Tamil Nadu Electricity Board stated :-

"Even though, the average cost of coal is Rs. 485/- per tonne at the colliery end, TNEB has to spend about Rs. 838/- per tonne towards transportation and handling charges."

3.9 Tamil Nadu Electricity Board also stated that the cost of generation per unit increases many times than that of pit-head stations.

3.10 Emphasising that the power plants should be put up at pit-heads, Shri N. Tata Rao, Former Chairman, Andhra Pradesh State Electricity Board stated during personal hearing:-

"I used to argue that power should be generated at the cheapest possible rate and distributed to the places where it is required. Transmission is much cheaper than transport of coal to distant places. For a 1,000 MW station one transmission line is required to transport that power to where it is required. Afterwards, you can forget about maintenance of the line which is practically negligible. Transmission losses in power are also negligible. Even from the security point of view, I can put one man per tower to take care of that so that sabotage does not take place. But in the case of rail transport loss of coal in transit is substantial. Maintenance cost of the rolling stock and the rail tracking is very high and yet we are putting up stations at all sorts of places. From the environmental point of view also it is much better to put stations at the pit-heads.....you can put up stations at places where all the required facilities such as coal, water, land etc. are available and feed the energy into the national grid. The national grid will distribute power to the individual States at a uniform rate."

3.11 Explaining that due to inadequate supply of gas from Bombay High to Trombay Thermal Power Station, there is shortfall in

power generation, Tata Electric Company stated in a written reply:-

"Against committed quantity of 1.5 MMCMD, we had been receiving and consuming gas in the range of 2.2-2.5 MMCMD. However since last two years, our gas supplies have been drastically cut down to 0.5 MMCMD. Although the gas availability has now improved since July'94 after modification work in Bombay High, our supplies and commitment has not reached 1.5 MMCMD so far, leave alone restoration to previous supply level of 2.5 MMCMD. Our request for committed supply to 2.5 MMCMD is pending with Ministry of Petroleum. Trombay can utilise upto 6.5 MMCMD of gas."

3.12 During the on-the-spot discussions at Guwahati the representatives of Assam State Electricity Board informed the Sub-Committee that as increased quantity of gas became available, a second station of 60 MW was set up at Lakwa in stages. However required quantity of gas in required pressure is not supplied due to lack of co-ordination between Oil India and Oil & Natural Gas Commission.

3.13 With regard to supply of gas, the Power Secretary stated during evidence:-

"About gas, my understanding is that even the public sector units are not entirely happy with the gas contracts they are required to sign. It is a one way contract. They feel that they are obliged to take gas whenever it is supplied. They do not get recompense when they do not get gas. This is something on which we have not so far made anything."

3.14 The following recently CEA cleared projects reportedly envisage use of indigenous natural gas: -

1.	Paguthan CCGT Plant, (Gujarat)	—	655 MW
2.	Jegurupadu CCGT Plant (Andhra Pradesh)	—	216 MW
3.	Godavari CCGT Plant (Andhra Pradesh)	—	208 MW
4.	Faridabad CCGT Plant (Haryana)	—	400 MW

In addition, the Bawana CCGT plant of DESU also envisages use of indigenous gas for which project report is yet to be received in CEA.

3.15 In a Memorandum furnished to the Sub-Committee NTPC stated that its coal based plants operated at 78.07% PLF with an all time high availability of 86.48% and that PLF could have been still higher but for the loss of generation due to grid restriction and non-availability of coal and gas. The details of loss of generation due to non-availability of coal and gas as furnished by NTPC are given below:-

(in Million Units)

		1993-94	April-Oct. 93	April-Oct. 94
(i)	Loss due to coal shortage	299	182	1959
(ii)	Loss due to non-availability of Gas	3,925	1648	3951

3.16 National Thermal Power Corporation suggested in this connection that these should be legally enforceable agreement with gas/coal suppliers regarding supply of fuel.

3.17 Indicating the position with regard to fuel arrangements, Confederation of Indian Industry in a written reply stated:-

"So far coal is concerned, intense negotiations with Coal India Limited has brought satisfactory results and commercially viable guarantees acceptable to the developers/lenders are now available. However, the Railways who are responsible for carrying coal from pitheads to the power stations have not yet come up with acceptable and legally enforceable performance guarantees, but the trends of discussions with the railways are positive. This should also apply in principle to Gas Authority of India Limited for supply of gas as fuel."

3.18 The Sub-Committee desired to know from the Ministry of Power, the arrangements that have been made to ensure required quality and quantity of coal/gas to the new power projects. The Ministry of Power in a written reply stated:-

"Fuel arrangements have been finalised for all the Thermal Projects cleared by CEA.

The fuels used for power generation are coal, natural gas and petroleum products.

In case of projects based on domestic coal, the developers sign legally enforceable contracts with coal companies or develop captive coal mines from the coal blocks allotted to them. For natural gas M/s. GAIL already have standard gas supply contract which the developers are required to sign. For petroleum products, the developers sign agreement with oil companies.

The arrangements include quality and quantity specifications. Only in the case of natural gas there is no guarantee for quality of gas since there is no back up guarantee for GAIL with ONGC. In such cases the developers sign agreement with oil companies for back up fuel."

3.19 Enquired whether the investors are satisfied with the arrangements the Ministry of Power in its post evidence reply stated :

"As far as the projects for which PPAs have been signed, the investors have satisfied themselves with the arrangement. For future projects, guidelines for fuel supply agreements are under preparation in consultation with the Ministry of Coal. Discussions are being held with the Ministry of Railways for framing guidelines for coal transportation."

3.20 As regard supply of coal to new power projects, the Ministry of Coal stated as under:-

- (a) Wherever CIL can make coal available from their projects, linkages are being given and power plants are being advised to enter into legally enforceable coal supply contracts covering quantity, quality, delivery schedule and price etc.
- (b) Alternatively, under the amended Coal Mines Nationalisation Act captive coal blocks are being offered which can be developed by the power company.
- (c) Some power companies who are not prepared to develop their own captive mines are being asked by CIL to advance capital funds so that CIL can develop coal mines for them and repayment of such advance could be done (alongwith interest) in form of coal. Power company and coal company can bilaterally negotiate the term and conditions of such advance.

3.21 The Ministry of Coal stated further:-

- "(a) All the new power plants coming up in future can be supplied coal from indigenous sources. Coal can be supplied to the new power plants either from CIL/SCCL mines or captive



mines can be developed by the power companies under the new dispensation. Wherever power companies are reluctant to taking development of captive mines they can ask CIL/SCCL to develop dedicated mines for which capital funds will have to be advanced by the power companies on mutually agreed terms.

- (b) Further, in order to ensure timely development of coal mines, power companies and coal companies must enter into legally enforceable coal supply agreements covering quantity, quality, delivery schedule and price of coal etc.
- (c) In order to ensure better quality of coal supply and also to avoid transportation of stones, shale and non-coaly material coal should be beneficiated. Power companies must accept washed coal and pay extra towards washing cost.
- (d) Rail transport infrastructure will also be required to be augmented expeditiously for smooth movement of coal from coalfields like Talcher, Ib, North karanpura and Rajmahal. Ministry of Railways and Ministry of Power must initiate action in this behalf."

3.22 Expressing apprehension about the proposed import of fuel by private power developers, Dr. Arun Ghosh stated in his memorandum:-

"To the extent that some of the projects are based on imported fuel (e.g. that of Enron) they involve a significant (and continuing long term) drain on the foreign exchange resources of the country."

3.23 Reacting to the apprehension about fuel import, the Ministry of Power stated in a written reply :

"It is true that the Dabhol gas based project and some of the coal based power projects like Cuddalore TPS (Tamil Nadu), Mangalore TPS (Karnataka) are based on import of fuel. A prudent power policy has to be based on multi-fuel policy. Gas is emerging as a preferred source of fuel for power all over the world especially it is environment friendly. Import of fuel for a power plant by itself should not be a matter of concern. The Government is seriously considering Oman gas pipeline proposal for import of a very large quantity of gas which is meant for use not only by the power sector but also other sectors of the economy.

Import of fuel is governed in terms of the normal rules and regulations regarding imports, and there are no special concessions

given by the GOI to import fuel for power plants. For example, import of coal and ING is on OGL and this has nothing to do with the private sector participation in power. No guarantee of foreign exchange availability is given by the Government of India to the private promoters."

3.24 Asked how diesel was allowed to be used as a fuel when there was scarcity of foreign exchange, the Secretary, Power stated :

"Sir, this is a recent development. In a desperate bid to find a solution the States go towards hydro carbon or diesel based power projects. The Central Electricity Authority is examining this aspect and a policy decision will be taken."

## IV. IMPACT ON PUBLIC SECTOR

### A. DOMESTIC MANUFACTURING CAPABILITY

4.1 The Committee desired to know the impact of new power policy on domestic power plant equipment industry. The Ministry of Power stated in a written reply that domestic manufacturing capability would be affected to the extent the private entrepreneurs choose to import the generating and other equipment. The Ministry of Power stated further:-

"In case of public sector projects, indigenous manufacturers have full opportunity to complete and get the orders if the prices are competitive. As regards private sector projects, most of the projects cleared by CEA envisage import of equipment mainly for the main plant. The balance mechanical equipment such as coal handling plant, ash handling system, plant water system and balance electrical equipment are generally supplied by indigenous manufacturers. It may be mentioned that the source of equipment will depend upon the financing of the project. It may, however, be mentioned that indigenous boiler manufacturers have participated in two projects in supplying major part of the boiler plant. They would need to pursue with the turnkey contractors and developers and quote competitive price, meeting the stringent requirement of turnkey contractors. If they could come up with equipment with suppliers' credit at a competitive price there will be more opportunities for them to participate in private sector projects."

4.2 Pointing out that multi-national manufacturers of equipment are facing acute recession and the global market for equipment is hardly 10 to 12% of the manufacturing capability, Shri Ashok Rao, President, the National Confederation of Officers Association of Central Public Sector Undertakings stated during evidence:-

"All the foreign equipment manufacturers desperately need the Indian market. India can dictate any terms, and they will have to come because they have no future in their own countries and they are dependent on export intensity".

4.3 The Bharat Heavy Electricals Ltd., a Central Public Undertaking pleaded in its memorandum submitted to the Sub-Committee that "in other countries, the policy ensures that substantial part of equipment is purchased by IPPs from local sources. It needs to be ensured that at least 50% of the main generating equipment are sourced by IPPs from BHEL."

4.4 Asked to specify the countries which follow this practice, BHEL stated in a written reply that in the case of World Bank/African Development Bank/Asian Development Bank aided projects countries like Egypt and Indonesia insist for procurement of substantial part of equipment within the country. Malaysia also gives preference to "Bhumiputra" Companies.

4.5 BHEL stated in a Memorandum, that no regular tendering procedures are followed by Independent Power Producers (IPP) and they directly tie up the suppliers. BHEL pleaded that IPPs should follow international competitive bidding procedures as stipulated by World Bank/ADB which encompasses the methodology of calling for tenders, specifying evaluation criteria and opening of tenders in public.

4.6 Enquired as to why it should not be ensured that private investors procure plant and equipments from indigenous manufacturers, the Ministry of Power stated as follows:-

"It would be difficult to compel the private sector investors about the modality to be adopted by them in sourcing their equipment. The onus for raising the entire financing for the project is on the developer. Equipment comprises the major portion of the capital cost and the commonly prevalent commercial practice is that this is funded by suppliers' credit. Therefore, it is not practicable to dictate the developer the source from which the equipment should be purchased. It is, however, open to the State Electricity Boards to insist on tendering procedures for procurement of equipment etc. before finalizing the Power Purchase Agreement. In the liberalised economy, it is upto BHEL to contact the investors with attractive offers for supply of equipment at competitive price. There is no reason why BHEL should not be able to take advantage from this emerging market if their prices are competitive and backed by standard commercial practice like supplier's credit."

4.7 Enquired whether it is not desirable to stipulate international competitive bidding for procurement of equipments by private promoters the West Bengal State Government stated in a written reply:-

"The Govt. is of the firm view that international competitive bidding should be made mandatory for all projects in the matter of procurement of equipment and EPC contract. The tender specifications for equipment etc. should be made transparent enough so that Indian Industries of repute may bid Tender evaluation is to be made by a committee, which will include a

representative of Central Electricity Authority and also one from the State Government."

4.8 In this connection, Tamil Nadu Electricity Board stated as follows:-

"International competitive bidding procedure is insisted for procurement of generating equipments. Copies of Equipment procurement construction contracts entered by private promoters are obtained from them for scrutiny by Tamil Nadu Electricity Board."

4.9 To a query whether project cost will come down if competitive bidding procedure is adopted for procurement of individual equipment instead of bidding for turnkey project implementation, Ministry of Power stated in post evidence reply:-

"If competitive bidding procedure is adopted for the procurement of individual equipment instead of bidding for turnkey project implementation, the project cost could come down provided there is timely flow of funds and the implementing agency is capable of effectively coordinating the various contract packages so as to complete the project in time. However, for the private sector projects in India, the financing institutions are insisting on firm EPC contract and finalisation of the financial package before the commencement of the project so that the project is completed within the time and cost."

4.10 According to experts under foreign investor promoted power projects in India—all promoted by or with the help of international power equipment manufacturers—the cost of power equipment has been jacked up. The lack of competitive bidding has led to significant "padding" in the investment costs.

4.11 Asked how the plant cost of private projects with imported equipment compared with that of projects with indigenous equipments, the Ministry of Power, stated in a written reply as follows:-

"In the case of private sector projects cleared by CEA there has been limited bidding by the developers (except in the case of Dabhol project). It may be mentioned that the main plant cost of the recently CEA cleared private sector project cost is the firm completed cost as against present day cost offered by BHEL which will be on the lower side. Further, there is higher percentage of liquidated damage stipulations for various factors such as output, efficiency, time delay and emission standard which are not there for the State Sector projects. Taking the above factors into account,

it may be stated that the private sector plant cost compares favourably with the cost of BHEL plant cost. CEA has been scrutinising the schemes of private sector more closely realising that cost of private sector scheme cleared by CEA would have a direct bearing on the tariff."

4.12 BHEL has a production capacity of 6000 MW per annum. It was expected that with the installed capacity additions of 30,000 MW in a Plan period BHEL should be in a position to meet the full demand within the country, However, orders available for BHEL at present is significantly low in comparison to it's capacity. According to BHEL considering its production capacity and delivery cycle for power generating equipment, BHEL should, at any given time, have orders available for execution for about two to three years' production, i.e. around 12000 to 15000 MW. Against this, actual orders available as on 1/4/94 was only 5034 MW, which is even less than its annual production capacity.

4.13 Regarding under utilisation of capacity the CMD, BHEL stated during oral evidence:-

"The capacity of Haridwar (Unit) is around 3500 MW. Thermal (4 × 500 MW + 6 × 210 MW). We have at present orders for 1500 MW approx. For execution in thermal areas."

4.14 Explaining the reasons for poor order book position of BHEL, the Finance Secretary stated during evidence:-

"The main reason is that the public sector power programme is not being adequately funded because the State Electricity Boards do not have money. I do not know how the BHEL problems can be solved. The real solution to the problem is that you have five times the present capacity to be set up in public sector and we must make sure that the State Electricity Boards can pay for it. BHEL problem is purely a consequence of the financial collapse of the State Electricity Boards."

4.15 Emphasising the need for standardisation of equipments. Dr. Arun Ghosh stated in a Memorandum that if power equipment is not standardised—which is possible only with standard BHEL thermal plants of 200 and 500 MW capacity for each turbo-alternator (and similar capacity boilers)—the result would be:-

- (a) inefficiency and higher costs of maintenance ;
- (b) serious problems of break-down where imported plant is used and required spares are not readily available in the country ; and

- (c) higher inventory costs of spares, with all new power stations having their own special equipment, for which each plant will have a different suppliers.

4.16 On the question of sales aid financing, BHEL stated in a Memorandum as follows :-

"Present policy on investment in power sector envisages a minimum of 20% by way of equity, not more than 40% to be brought in from external sources attracts sales aid financing which implies import of main equipment. While IPPs are generally convinced about BHEL's capability to supply the main equipment on a competitive basis both in regard to cost and quality of equipment and delivery terms, they are insisting that if BHEL were to arrange financing, it should be done in such a manner as not to interfere with the capacity of IPPs to raise 40% financing from Indian public financial institutions for meeting the cost of auxiliary equipment, taxes, duties etc."

The CMD, BHEL stated during evidence:-

"Primarily the difficulty is of financial capability. That overseas suppliers who are wanting to sell the equipments are able to arrange. They are also able to arrange export credit, commercial guarantee etc. because the interest rates abroad are cheaper. We are unable to raise the same from the overseas market. As I said very clearly, the capacity and the capability of the Indian FIs sector itself is limited. They have 40 percent limit which they provide for a project. We are unable to utilise this."

4.17 BHEL informed in a post evidence reply that it was discussing some proposals in regard to sales aid financing and no final outcome had been reached. BHEL stated that it was doubtful that large commercial loans, for longer periods required for power projects would be forthcoming without counter guarantee from Central Government. The Ministry of Finance has reportedly clarified that Government Guarantee would not be available for such commercial borrowings. Asked about the position in this regard, the Finance Secretary stated during evidence:-

"As regards, suppliers' credit, we would be willing to allow BHEL to have access to the borrowing markets, if it wishes. We have no difficulty on that. The point is we cannot give the money. Sir, within the policy that we are handling, if BHEL can find borrowing resources, we are not holding them back. Now if they are viable and they can find borrowers, they should not do it on a Government Guarantee. They have to risk on their own."

4.18 For Jegurupadu Project, M/s. GVK Industries had invited bids from prospective turnkey contractors for Combined Cycle Gas Turbines including BHEL for a total capacity of about 200 MW. Pointing out that BHEL's offer was higher in this case, the Chairman, CEA stated during evidence:-

"They had received three offers from M/s. ABB, M/s. Thomassen and from BHEL. BHEL also quoted. First of all, there was a very heavy foreign exchange outflow in the BHEL offer. Surprisingly, 78 percent was the foreign exchange outgo even in the case of BHEL. BHEL's offer was higher by Rs. 48.60 crores. Therefore, they did not get the order in this case."

4.19 BHEL, however, stated in this connection as follows:-

"In case of Jegurupadu project, there was no competitive bidding. Neither open tenders were called nor evaluation criteria specified. In the absence of read out prices in an open tender, it is not possible to know whether BHEL prices are lower or higher. Further offer obtained from BHEL by the IPA was on the basis of certain configuration of gas turbines and steam turbines while it is understood that the other offer referred to by Chairman, CEA, has different configuration. Comparison should be made on like-to-like basis after calling for open tenders with proper evaluation criteria. BHEL is confident that if proper competitive bids were called as per ICB practice, order would have been secured by BHEL for this project. For a project like Jegurupadu, BHEL's foreign exchange outgo would have been only 20-25%."

4.20 CEA in a written reply stated that "M/s. GVK wanted to go in for more than one GT to facilitate flexibility in operation. The bidders had the option to quote their own configuration ensuring the requirements of M/s. GVK. Based on these, quotations from various companies, including BHEL were received and the lowest bid was accepted."

4.21 BHEL pointed out in its Memorandum that in the international competitive bidding including those to be called by IPPs, the present duty structure puts indigenous manufacturers like BHEL at a relative disadvantage. Power generating equipment attracts nil counter-vailing duty when imported complete, whereas customer has to pay excise duty and sales tax on equipment supplied indigenously by BHEL.



4.22 Reacting to this point, the Finance Secretary stated during evidence:-

"That is an arguable position whether the duty on imported equipment is too low or not. We have two different views here. The Ministry of Power is strongly in favour of this whereas the Industry Ministry has represented against it. I know BHEL is not very happy with this set up but I do not think they really have a problem."

## B. LEVEL PLAYING FIELD

4.23 The approved investment for NTPC's projects is of the order of Rs. 19,426 crores (excluding Transmission Systems). The Corporation has executed/is executing ten Coal Based Super Thermal Power Projects with a total capacity of 16835 MW. Of this, 14660 MW has already been commissioned (as of October, 1994) and the balance capacity is under implementation.

4.24 NTPC's installed capacity of 14,660 MW comprising 11,740 MW of coal based and 2,920 MW of gas based capacity, constitutes about 19% of the country's total installed capacity and about 62% of capacity in the Central Sector. Of this, 2,200 MW was installed during the 6th Plan period (1980-85) 7,613 MW during the 7th Plan period (1985-90), 1,520 MW (including take over the Feroze Gandhi Unchahar TPP from Uttar Pradesh Rajya Vidyut Utpadan Nigam) during 1990-91 and 1991-92. During the 8th Plan period (1992-97), NTPC's capacity addition is envisaged to be 5002 MW, out of which 3327 MW has already been commissioned.

4.25 The entire raison d'être of private sector participation in the power sector is that the necessary resources to match with the increasing demand for capacity addition are not available with the public sector and that these funds will have to be raised from the private sector. According to Ministry of Power, NTPC has not been able to take up any new projects in the last four years mainly for want of resources. One of the earlier sources of funding for NTPC projects was that of erstwhile USSR with the collapse of which, at least three major projects went into doldrums.

4.26 NTPC, however, claimed that it is capable of developing projects based on its internal resources generation, by raising resources for multilateral and bilateral financial institutions and direct commercial borrowings. While NTPC has the potential of adding about 2500 MW to 3000 MW capacity annually, its actual contribution to a great extent would reportedly depend upon the government policy support for its commercial working, timely investment approval of projects and availability of funds.

4.27 Asked about the Ministry's position with regard to NTPC and what remedial measures are proposed to provide congenial atmosphere for the PSU to flourish, the Power Secretary stated during evidence:-

"It is not correct that NTPC has not been allowed to set up new projects in the last four years. The Government of India has rendered all possible support to it to expand and set up new projects. It has given it a sufficient plan allocation of Rs. 10062 crores for setting up new projects during the Eighth Plan. It has also been given adequate facilities to raise money both within the country and abroad. We have supported its request for loan from World Bank and ADB and other bilateral agencies and arrangements from World Bank and the first tranche of the 400 million dollar loan has already become effective. It has also supported it to get loan from the ADB for the Unchahar Project in UP and has assisted NTPC for getting loans for environmental related activities from USAID. This project is at a late stage."

The witness also added:-

"I would like to assure this Hon'ble Committee that we are solidly behind NTPC."

4.28 Dr. Tata Rao, Former Chairman, APSEB, emphasised that Central Public Sector Undertakings on their own or as consortium with other PSUs and/or private sector should also be allowed to bid for power projects advertised by the State Sector for bidding.

4.29 Regarding the question of setting up joint ventures for establishing power projects, BHEL stated in a note as follows:-

"Power projects can be taken up on Joint Venture basis by Indian parties, say, BHEL/NTPC/Public Boards who may be given incentives including guarantees on payment as are being provided to IPPs. This would have an added advantage of reducing the foreign debt burden, development of indigenous technology and generation of employment."

The Ministry of Power stated in this connection:-

"The suggestion that Joint Ventures should be formed with BHEL, NTPC and SEBs etc. to set up new project is welcome. The private power policy does not preclude such arrangement and as a matter of fact there are a number of joint ventures pursuing power projects which have NTPC/SEB, as a partner."

4.30 Asked whether PSUs have not been given autonomy to decide about bidding for private projects, the Ministry of Power stated in a written reply:-

"The present policy on privatisation and the relevant notification equally applies to CPSUs like NTPC etc. In fact the NTPC has been authorised to form JVC's and make equity participation. The State Governments have also been advised that the NTPC may also submit bids for projects advertised under the competitive bidding process. In fact, the NTPC has bid in one or two cases. The PGCIL is also negotiating with private promoters to form JVCs for investment in the Transmission Sector."

4.31 The Sub-Committee observed that various aspects in regard to handling of public sector projects by the government have put the Central Public Sector Undertakings in a disadvantageous position as compared to private investors. Some of these are indicated below:-

- (i) The tariff for Central PSUs provides for a meager incentive of one paise per Kwh for every per cent increase in PLF over the normative level of 68.5% as against an incentive upto 0.7% increase in return on equity for every one percent increase in PLF for private producers.
- (ii) No guaranteed off-take of power from Central generating station as against guaranteed off-take of power for private sector plants.
- (iii) The guarantee of payment as applicable to private sector is not available to PSUs.
- (iv) Approval of cost at the level of start up of construction for PSUs against completed cost provided for in PPAs.

4.32 Enquired whether the government looked into these aspects with a view to effect suitable modifications so that PSUs are not put into a disadvantageous position in a competitive situation, the Ministry of Power furnished point-wise explanation as below:-

- "(i) The Government has very carefully looked at the situation in which private sector is increasingly entering the power sector and taken due care to ensure that the public sector is not put in a dis-advantageous position. Earlier the tariff allowed to CPSUs for increased generation above the normative level was kept at a low level since their fixed and other charges were already being recovered within the normative level and the rate allowed for the extra power was only to take care of the

extra variable cost. Also all the public sector undertakings in the power sector were being supported extensively in financial terms by the Government through budgetary support and the funding arranged from multilateral and other agencies for them and the overall cost of the capital to them was not very significant. Also no liquidity damages had been imposed earlier upon the Central undertakings for not adhering to the prescribed schedule of generation.

Now that pari pasu with the private power units, CPSUs are also being required to raise funding from outside and also clauses for payment of damages if they do not generate power as per a given schedule are likely to be imposed on them/are being imposed on them, the incentive amount for them above the normative level has been increased to the same level as for the private power units, i.e., 0.7% increase in return on equity for every one per cent increase in PLF.

- (ii) It is not entirely correct to say that the central generating units had not been given a guaranteed off-take of power as being given to private units. Today, we are operating in a situation of shortages and almost all the power which can be produced by the generating stations of public sector undertakings is being consumed and except for two or three hours in the night when the demand reduces all these units are required to backdown but this is a phenomenon which has occurred all along in view of our demand pattern. Otherise agencies like NTPC could not have been able to have PLF above 70% as they have done during the last three years continuously. At most the effect on PLF of backing down on NTPC unit has been 2 to 3%. It may also be noted in this context that CPSUs are in a better position than most private power projects since they are not required to pay heavy penalties in case they do not produce the contracted power as has been imposed upon the private producers.
- (iii) It is not correct to say that CPSUs have not been given adequate support in this matter (guarantee of payment). We have so far resorted to three plan appropriations since 1990 to help these units to recover their dues and Rs. 3000 crores of arrears have been agreed to be recovered through central plan appropriation, a facility which is not being given to any private power project.
- (iv) It is correct that in the case of PSUs, we give approval to capital cost before the project begins whereas in the case o

private sector projects approval is given to the completed cost. This is in fact a facility to the public sector projects and should not work against them since they can have their cost revised upwards on account of changes/delays and time and cost over-runs which are very common phenomenon with PSUs. To that extent this is a blessing in disguise to public sector projects."

4.33 According to Power Grid Corporation, the present system of allocation of power from Central Thermal Power Generating Organisations to States on a fixed basis severely limits the flexibility of all the Central Power Generating and transmission companies. This leads to sub-optimal utilisation of power generation and transmission resources, thereby not only leading to reduced power availability but also to superfluous demand for additional plan resources to meet a given level of power requirement. The Sub-Committee enquired whether it is not desirable to allow the companies to decide power supply to various States and to enter into short and long term agreements with them having relation to peak load, intermediate load and base load. In reply, the Ministry of Power stated:-

"The Government has taken various steps to allow more flexibility to the Central Power Generating Organisations in their commercial operations including regulation of power to States. It may not be desirable to allow the Central Sector Generating Companies to unilaterally decide the quantum of power supply to various States/UTs either in the short term or long term. However, if Private Sector participation becomes significant and choice from alternate sources becomes available to the States/UTs, there could than be no objection to allow the central generating companies freedom to negotiate and decide."

4.34 The Ministry of Power, however, added that in case of default CPSUs have been authorized to regulate power supply and to divert it to other States. To that extent the central allocation formula only gives a State an entitlement to draw a particular quantum of power and in case it does not pay for it the CPSUs are free to divert that power to other States.

4.35 The NTPC pleaded that for expeditious decision making in the case of projects where no net budgerary support is contemplated from the Government, the authority for investment approval may be vested in PSU Board. Enquired whether the Ministry had any objection to this proposal which appeared reasonable, the Ministry of Power stated in a written reply as under:-

"The CPSUs enjoy total autonomy in decision making in their financial management and day to day operations. However, decision to invest in new power projects involves various aspects which have to be scrutinised at the Ministerial level such as external commercial borrowings, justification for the project in a particular region, maintaining regional balances etc. It is therefore necessary that the investment decisions are considered from all these angles which necessitates project appraisal in the Ministry of Power/ Finance/Coal etc."

4.36 According to NEEPCO, the absence of Government Guarantee for external commercial borrowing is posing concern in respect of execution of its projects. Unless the Government extends guarantee, the projects may not take off at all. Considering the fact that the cost of NEEPCO projects are considerably lower compared to private projects, the Sub-Committee asked why Government should not extend guarantee to NEEPCO. In reply, the Ministry of Power stated:—

"Agartala gas turbine project (4 × 21 MW) in Tripura is the first project sanctioned for implementation by NEEPCO in the Central Sector with external commercial borrowings (ECB). The project has recently been sanctioned in December, 1994 and negotiations for external commercial borrowings with Deutsche Bank for 85% financing of the equipment for the project have just been concluded and a decision on availing of this ECB has been taken by the Board of Directors of NEEPCO in its meeting held on 3rd February, 1995. Although, a formal reference based on the negotiations and approval by the NEEPCO Board of the terms and conditions of ECB is yet to be received for approval of the Government, nevertheless, advance action had been initiated towards provision of Government of India Guarantee for which Ministry of Finance had been approached and a view thereon is expected to be taken shortly by them."

### C. NEYVELI LIGNITE CORPORATION—ZERO UNIT

4.37 A 210MW power project (called the Zero Unit project) was to be added to the second TPS Stage I of Neyveli Lignite Corporation was sanctioned by the Govt. at an estimated cost of Rs. 397.26 Crores in March, 1989. It has been stated in the Annual Report of the Ministry of Coal 1993-94 that for various reasons, orders for procurement of power plant equipment could not be placed. Due to resource constraints and in consonance with the policy enunciated by the Department of Power for private sector participation for generation

of electricity, this project was reportedly transferred to M/s. S.T. Power Systems Inc. of USA, promoted by an NRI.

4.38 When the Sub-Committee held discussion with the officials of NLC at Neyveli during the study tour, it was stated that the NLC was interested in putting up the 'Zero Unit' and it was in a position to put up this plant on its own without budgetary support. NLC had even laid foundation stone for setting up of the Zero Unit. Subsequently however the project was transferred to a private party.

4.39 During the discussions with the representatives of the Ministry of Coal, the Sub-Committee desired to know what action was taken by the Government to implement the project which was sanctioned in March 1989. In reply the Coal Secretary stated:-

"This project was sanctioned on 23rd March 1989 for Rs. 397.26 crore. NLC wanted to negotiate with four firms. NLC had negotiations with Trans Electro and three other companies. These are the people who had supplied some equipments for 2nd Thermal Station Stage I and II. The NLC thought that there could be a repeat order at the same price. That is why, they went ahead with the negotiation.

Then, various things happened. They did not accept these repeat orders. Their payments were held up. In the meantime rupee went through a devaluation process. Then in order to make this active BHEL was also asked to put in their offer. That was in 1990. Now, the negotiations by the NLC Board Sub-Committee went on and revised prices were noted by the NLC Board on their side. Then NLC Board and BHEL went on with discussions. BHEL had submitted their offer and NLC Board discussed it in detail with BHEL. The revised price offers of Trans Electro were open also and final results just could not emerge because of the time taken in negotiations. Meanwhile the validity periods expired and the validity period had to be extended. Rs. 397.26 crore with July 1988 base was revised to Rs. 511.03 crore which had a base of March 1991 and finally in the process of negotiations the price that emerged was Rs. 712.05 crore on December, 1991 base."

4.40 Elaborating the chronological events that led to transfer of the project to a private investor, a representative of Coal Ministry stated during evidence:-

"I will give you the chronological events. The projects was sanctioned on 23.3.89. NLC requested for the Ministry's permission to negotiate with the three companies, then the foreign firms submitted their offer between July and September 1989. Thereafter

in November 1989 after seeing their rates the Ministry advised NLC to bring in BHEL. Thereafter the Neyveli Board set up a Sub-Committee and held discussions with BHEL in February 1990.

In march 1990 the BHEL submitted their offer. In between the foreign firms had also submitted. They were asked to explain their offers. The problem was that the BHEL offer and the foreign firm's offers were all on high side.....After that, the Ministry asked them to negotiate with BHEL and ascertain their best price. That was in August 1990. After they completed their negotiations ultimately, NLC came back to the Ministry and said, in January 1991, that the evaluated price of BHEL was higher in comparison with those of the others. At that point of time the BHEL price was Rs. 4 crore higher than the offer of the foreign firm. Thereafter we made a reference to the Department of Economic Affairs and simultaneously we asked to extend the validity by all the four firms. This was between February and November 1991. The Ministry of Finance advised us that we should revise our cost because enhanced requirement of the foreign exchange has become necessary. By then the estimated cost had also gone up and therefore this required a fresh PIB and CCEA approval.....Thereafter we calculated the price and we found that the price had gone up by 110 per cent with reference to foreign offer and 70 per cent with reference to BHEL offer. At that point of time the BHEL declined to extend their validity period and no more extension was there. This was in September 1991. January 1991 was the time when we first took it up with the Finance Ministry. In August 1991 we got the advice of the Finance Ministry. Thereafter between November 1991 and January 1992 we examined the position again, but at that point of time, the then Chairman wrote to us very clearly, that an offer from an NRI entrepreneur had come. He had talked to him, the Chairman NLC and he wrote a letter dated 27.11.1991."

4.41 Explaining the reasons for transferring the Zero Unit Project from NLC to a private investor, the Ministry of Coal stated in a written reply as under:-

"Owing to various reasons, suppliers of main power plant equipment could not be identified and orders for procurement could not be placed. Meanwhile, there was escalation in costs. This necessitated revision of the cost estimates in respect of this project. While action for revising the cost estimates was being taken as per the laid down procedure, NLC faced resource crunch. At the same time it had other ongoing and committed projects having larger priority. Even for funding these projects exclusive of



Zero Project, the resource gap had been assessed by independent financial institutions at between Rs. 1900 crores and Rs. 2100 crores. In 1991, the Department of Power liberalised the investment policy in power sector enabling the private sector to invest in power generating projects. M/s. STP, an American firm owned by an NRI in the USA made an offer for proposing to take over the Zero Unit Project in its entirety and to arrange its funding through Indian and foreign sources. In the face of non-availability of adequate funds/resources with them, NLC could, therefore, either defer the project indefinitely or it could entrust it to the private sector under Government's liberalised policy to ensure higher availability of power in national interest. Since adopting the former course would have denied much needed energy to Tamil Nadu, it chose to the later option in the national interest.

The proposal of M/s. STPS was thoroughly examined and it was decided with the approval of the competent authority to transfer this project to M/s. STPS. A memorandum of Understanding (MOU) between NLC and STPS Inc. was signed on 31.8.92. M/s. STPS have formed an Indian company known as M/s. ST-CMS Electric Company to implement this project. The size of the unit has been enhanced to 250 MW and the site has also been shifted to locate it outside the area of NLC."

4.42 It has been indicated that the selling price of power from the project being implemented by STPS would range from Rs. 1.73 to Rs. 3.39 per unit over 30 years including electricity duty and taxes.

4.43 The Sub-Committee called for the original files from the Ministry of Coal relating to transfer of NLC Zero Unit Project to STPS. On scrutiny of the files, the Sub-Committee observed that on 23rd October, 1991 a U.S. Congressman wrote to Prime Minister of India introducing a non-resident Indian Mr. Sharad Tak who was looking for investments in India. On 25th October 1991, the US Consulate General at Madras wrote to the CMD of NLC stating that certain specific projects being pursued by NLC in the field of power generation based on lignite as a fuel are of special interest to Mr. Tak. The letter added that Mr. Tak has proven record of starting and successfully operating companies in diverse fields such as software, communications and broadcasting and real estate. On 26th November 1991, Shri Sharad Tak wrote to the then CMD, NLC (Shri R. Gupta) proposing to put up the Zero unit plant either totally in the private sector or jointly with NLC. On the very next day i.e. on 27th November 1991, the proposal was considered by the NLC Board of

Directors and a letter sent to the Coal Secretary by the CMD of NLC. The letter dated 27th November, 1991 from the CMD of NLC, *inter alia*, reads as follows:-

"Shri Tak visited Nevyeli yesterday and since our Board Meeting took place today we had the occasion of discussing the matter in the Board. The Board was of the opinion that since Shri Tak is keen on investing in a Power Plant based on lignite, we could consider his proposal for one of our approved projects like 'Zero' Unit especially in view of GOI's recent trends of thinking on the Industrial front. As you may please be aware, while we have sanctioned projects and cleared by PIB of the order of Rs. 3400 crores (including Mine-I/TPS-I Expansion) we may not be able to get adequate funds and the required foreign exchange for all these projects. It may, therefore, be worth considering Shri Tak's proposal for one of our projects like 'Zero' Unit. For this purpose I am forwarding his letter in this regard for the Government to take a view in this matter.

NLC can supply lignite from Mine-II to the Power Plant, which may be owned totally by a company floated on Shri Tak's investment. Alternatively, NLC could provide land to this venture and the value of land could be the equity holding of NLC in this joint undertaking."

4.44 On the question of accepting Shri Tak's offer for investment in Zero unit, a representative of the Ministry of Coal stated during evidence:-

"Either we could reject the offer or find out the mechanism of finding from our own resources or to examine in detail whether there is any merit in that proposal, and if there were other proposals, those also ought to be considered. We had no mechanism of raising funds at that point of time because the market situation at that time was also not good."

4.45 As per the MOU signed between the NLC and ST Power System the project was to be located outside the NLC's existing power stations and M/s. ST Power System were required to arrange for coal transportation, plant water system and ash dump separately.

4.46 Enquired about the reasons for shifting the location from the originally approved site, CEA stated in a written reply as follows:-

"The reasons for change of site were discussed by CEA with NLC and they indicated that to avoid the problem of operation and maintenance of common facilities and sharing of their costs, NLC had decided to offer a separate site to ST Power System. Based on the above considerations the new site was accepted by CEA."

4.47 The originally approved cost of Neyveli 'Zero' Unit was Rs. 397.26 crores i.e. Rs. 1.89 crores per MW at 1988 price level. The project cost furnished by M/s. ST-CMS was reportedly brought down by CEA to the tune of Rs. 183 crores from the cost of Rs. 1508 crores furnished by the Company. The cost of the project therefore works out to Rs. 1325 crores.

4.48 Asked about the reasonableness of the project cost which works out to Rs. 5.3 crores/MW, the Ministry of Power stated in a written reply as under:-

"As regards the reasonableness of the project cost, compared with the cost of lignite based TPS-I Expansion of NLC as well as with the cost of Coal based TPS of other private sector project after making necessary adjustment for type of boiler, number of units, escalation etc. The cost per MW of NLC's revised cost estimate of 2 x 210 MW Neyveli TPS-I Expansion based on the lowest budgetary offer for turnkey contract execution received by NLC was about Rs. 4.25 crores/MW at 1994 level. This cost when escalated to completion period and correction for single unit works out to Rs. 5.65 crores/MW. The average cost of public sector coal based project cleared by CEA in 1993 was Rs. 3.25 Crores/MW. This cost when escalated to completion period and to include cost elements applicable to Private Sector, after adjusting for increase in boiler cost due to lignite firing and single unit, worked out to Rs. 5.33 cr./MW. Further based on the cost of Ib Valley units 3 & 4 (for which transparent competitive bidding procedure was adopted by M/s AES) and after applying the necessary corrections, the cost of ST-CMS project of NLC was found reasonable. Thus, it was seen that the cost per MW of Neyveli Zero Unit finally cleared by CEA was reasonable from all considerations."

4.49 The Sub-Committee desired to know the equivalent completion cost based on the approved cost of NLC's Zero unit. The Ministry of Power stated in a written reply as below:-

"As desired by the Committee, an exercise has been made to derive the equivalent completed cost of Private Sector Scheme for Neyveli Zero Unit based on the sanctioned cost of the scheme for NLC. The approved cost of Zero Unit for NLC was Rs. 397.26 Crores at July 1988 price level. The present day cost of the Unit taking into account various factors including scope of M/s. ST-CMS works out of Rs. 767 Crores including cost of common facilities to be provided for the new location which is estimated at Rs. 36.53 Crores when adjusted for completed cost on turnkey execution in Private Sector Works out to Rs. 5.33 Crores/MW."

4.50 The expected time for commercial operation of the project from the date of financial closure is stated to be 38 months.

#### D. KAMENG PROJECT

4.51 During on the spot study visit to Arunachal Pradesh & Assam the Sub-Committee was informed that Kameng Hydro Electric Project identified for implementation by NEEPCO was transferred to private sector.

4.52 Kameng Hydroelectric Project in Arunachal Pradesh was investigated by the Central Water Commission. The project had been identified for implementation by NEEPCO as a Central Sector Project in consultation with the State Government. Accordingly, the project estimates had been updated by NEEPCO for clearance by CEA and NEEPCO had gone ahead with various activities like hydro-meteorological observations at a cost of Rs. 4 lakhs with a view to firm up the Project parameters. In view of the resource constraints, Ministry of Power had approached the Department of Economic Affairs for posing the project for external financial assistance. Simultaneously, the project was included in the eighth five year plan and some funds had been earmarked to enable its investment approval and initiation of works. Action had been initiated for obtaining the necessary clearances including investment approval of the project. The State Government of Arunachal Pradesh had also issued a Government Notification Section 29 and Section 33 of the Electricity (Supply) Act, 1948 for implementation of the Project through NEEPCO. NEEPCO also proposed to utilise tunneling equipment imported for Ranganadi Project on the two tunnels of Kameng HE Project.

4.53 A pre-PIB meeting was held in the Department of Power on 15.10.1991 to consider the project report of Kameng Hydroelectric Project and associated transmission system before it could be posed to the public Investment Board. One of the requirements of the Project before it could be posed to the PIB was the Environment & Forest clearance for which the Ministry of Power had been pursuing with the Ministry of Environment & Forests (MOEF). MOEF conveyed their approval to diversion of 710 hectares of forest land for the project subject to transfer of the cost of compensatory afforestation over double the degraded forest land in favour of the Forest Department vide Ministry of Environment & Forests letter dated 29.5.1992. The revised cost of Compensatory Afforestation amounting to Rs. 3.42 crores had been worked out by the Forest Department of Government of Arunachal Pradesh. NEEPCO conveyed their agreement to release

the funds to that extent in a phased manner over a period of five years from 1992-93. However, the expenditure would be released only after the necessary investment clearance has been accorded by the Government of India.

4.54 The necessary investment clearance could not be processed further although forest clearance was available as the project was yet to receive environmental clearance. Ministry of Environment & Forests were requested to carry out a quick impact assessment of the project so that atleast 'in principle' clearance from environmental angle is available and detailed conditions of environmental clearance may be incorporated later on when the formal letter of environmental clearance is issued. This was to ensure that NEEPCO could undertake infrastructural development before the main project is taken up. In response to this Ministry of Environment & Forests in their letter dated 7.4.1993 informed Ministry of Power that with a view to ascertain the existence of gene pool reserve in the project impact area, the National Bureau on Plant Genetic Resources, Pusa, New Delhi had been contacted by the Ministry of Environment & Forests who in turn informed them that there are a good number of plant species endemic to the area and also the existence of economically important/threatened plants. Accordingly, Botanical Survey of India has been requested to carry out necessary survey.

4.55 Meanwhile the State Government informed the Ministry of Power of their intention to take up the project through private sector participation. The State Government was immediately informed that the justification of the project depended upon absorption of its power output in the North Eastern and Eastern Regions and being the largest power project being taken up in the region, the State Government did not have either the wherewithal to execute the project or to enter into regional or inter-regional distribution of power. In view of this it would not be possible in the State Government to undertake implementation of the project of such a magnitude. NEEPCO who are already executing Ranganadi Hydroelectric Project in the State would be geared to take up the Project with funds provided in the Central Plan. Further, as NEEPCO was at that time implementing the 400 KV Kathalguri-Malda Transmission Line for evacuation of surplus power from the North Eastern Region to the Eastern Region they are in a better position to manage the project. With this stage of development, size of the project, inter-regional transfer of power and implementation of conditions of environmental and forest clearance, Ministry of Power did not feel it desirable by the State Government to withdraw the project from the execution in the Central Sector. Further as Arunachal Pradesh abounds in economical viable hydro-potential, private sector participation could be considered for some other project

preferably of medium size. Separately, NEEPCO had meeting on 18.11.1992 with the State Government authorities and informed them of the merits in implementing the Project in the Central Sector.

4.56 The State Government, despite being informed of the merits of continuing the project in Central Sector for implementation by NEEPCO went ahead with signing of an MOU with Snowy Mountain Engineering Corporation of Australia for implementation in the private sector. Since 'water power' is a subject in the State list, concurrence of the State Government is a requirement before taking up any hydroelectric project in the State. Hence, Ministry of Power claimed that there was nothing more than this Ministry could do in the matter except persuade the State Government based on the merits for not withdrawing the project from the Central Sector and going in for private sector implementation. There has not been any tangible progress on the project after signing of the MOU in March, 1993.

4.57 During the evidence of the Ministry of Power, when it was pointed out that the Centre remained as a silent spectator on the plea of 'water power' being a State subject, the Power Secretary conceded:-

"I confess that in between when the State Government threw the spanner in the works we did not pursue if the way we ought to have."

### E. KARBI LANGPI PROJECT

4.58 It transpired during discussion with the officials of North-Eastern Electric Power Corporation during the study tour to Arunachal Pradesh and Assam that the Karbi Langpi Hydro Electric Project which was being implemented by the National Project Construction Corporation (NPCC) at a cost of Rs. 80 crores has now been transferred to a private investor *viz.*, Bharat Hydro Power Corporation for completion of the project at a cost of Rs. 300 crores. 50% of the work of the project had reportedly been completed by NPCC.

4.59 Karbi Langpi (Lower Borpani) (2 × 50 MW) hydroelectric project in the district of Karbi Anglong of Assam was sanctioned in September, 1979 at a cost of Rs. 34.15 crores and was scheduled for commissioning in 1985-86. This programme of commissioning was subsequently revised to June, 1989. The work on the dam was started through M/s Sibson Construction Company Ltd. in September, 1982 but the contract was terminated in March, 1987 because of slow progress of works and following fresh tenders, works were awarded to M/s NPCC in September, 1987. The project was posed to OECF

and loan agreement was signed in October, 1981. The amount under the (Overseas Economic Corporation Fund) OECF loan was 1700 million Yen. The procurement of equipment had been stored in warehouses since then. An amount of 1490 million Yen has already been spent out of the loan amount and the balance was for supervision and erection charges. The loan agreement was scheduled for closing in October, 1986 and was revised to September, 1992 in view of the considerable delays in the civil works on the project. M/s NPCC could not mobilise in time and in 1988 devastating floods caused extensive damage to the dam site and the coffer dam and as a result there was a severe set back to the progress of the civil works. What compounded the slow progress by the contractors, was the political situation in the area and restriction on use of explosives added to the delays. Immediately after the work was awarded to M/s NPCC, disputes between Assam State Electricity Board (ASEB) and M/s NPCC started and contractual difficulties led to slow progress of the works. The cash flow problems of M/s NPCC worsened the situation and ASEB terminated the contract of M/s NPCC in 1993. Meanwhile because of the substantial period for which the construction equipments were kept in the Warehouses, the OECF refused to revalidate the warranty for the equipments.

4.60 In March, 1993, ASEB, Government of Assam and M/s Subhas Project Marketing Ltd. entered into an MOU for the execution of Karbi Langpi HE Project. A new Company called M/s Bharat Hydro Power Corporation was set up in which ASEB had a share of 11%. This decision was not taken with the approval of the Government of India. Since then OECF has been requesting for adequate safeguarding of the equipment supplied under its loan. As per the MOU, the new company took upon itself the liability of OECF and it was incorporated in the MOU that in case Government of India decides to insist upon the repayment of the loan, the said decision of repayment shall be binding on the company. The new company also considered as deferred liability the sum of Rs. 116.21 crores as already spent by ASEB on the project. This liability would be liquidated by supply of 30% of the total generated power to ASEB. Once the liability was liquidated the company would supply the entire power to customers at rate determined by the company with prior approval of Government of Assam/ASEB.

4.61 The decision to transfer the project was taken by the Government of Assam who were competent to take this decision. However, Ministry of Power is interested in early completion of the project and if a new company can ensure that the project is commissioned early the Ministry of Power will support this. According to Government of Assam, the project required a further expenditure of

Rs. 100 crores (in addition to Rs. 116.21 crores already spent). This level of expenditure was not possible within the limited resources of the Government of Assam. M/s Bharat Hydro Power Corporation have already sent a detailed project report of CEA for approval which is under examination. As per the DPR, the construction programme has been scheduled so as to commission both the projects by July, 1996. The latest cost estimated in the DPR is Rs. 284.20 crores.

4.62 Enquired about the progress of the project after handing over to private sector, a representative of the Ministry of Power stated :

“The project is at a standstill.....The equipment has been brought and it is lying on the godown for several years now.....The warranties for the equipment are expiring. We are concerned about it.”

4.63 The witness also added that the OECF normally funds public sector projects and that the Government of Assam took a *suo-moto* decision when it could not raise funds on its own and they had set up a joint venture.

4.64 Enquired what the centre proposes to do about the project, the Power Secretary stated:-

“If the Govt. of Assam is willing to give it to NEEPCO, it will be taken up, Sir.”



## V. SUPPLY AND DEMAND MANAGEMENT

### A. INVESTMENT IN TRANSMISSION & DISTRIBUTION

5.1 PGCIL in a note furnished to the Sub-Committee stated that for a long time priority has been given to generation capacity addition while the Transmission and Distribution (T&D) segments have been neglected in the power sector. The Rajyadhyaksha Committee of Power (1980) had drawn attention to the inadequate investment in the T&D system and to the lack of integration between the generation plans and T&D plans resulting in under utilisation of generating capacity. According to the Committee, the transmission and distribution including rural electrification should receive about 50 percent of the total allocation of the power sector. However, the allocation of funds for T&D system under the plans particularly, under the more recent Sixth, Seventh and Eighth Plans have been very much less i.e. less than 30% of the total.

5.2 The development of transmission system has not been commensurate with the growth of installed capacity. This is due to various reasons like inadequate investment and delay in financial tie up, forest clearance, right-of-way problems, etc.

5.3 Some States have not done adequate investment in their transmission and distribution systems resulting inadequacies, voltage problems and unreliable supply conditions. There is, therefore, need to attract private participation in the areas of transmission and distribution.

5.4 The NTPC however brought to the notice of the Sub-Committee that it is not even able to operate its first stage Power Station at Farakka (600 MW) at an optimum level due to reduced off take by the Eastern Region States mainly on account of insufficient downstream transmission and distribution facilities. Unless, the Eastern Region States improve on the off-take of power supply from NTPC stations, NTPC's capacity utilisation would remain underutilised and the situation may further deteriorate with the commissioning of balance units (of 1000 MW at Farakka).

5.5 For effective utilisation of the capacity of its power plant in the Eastern Region, NTPC is constantly pursuing its customers in the eastern region for higher offtake and its planning transfer of power to other regions. However, the existing inter-regional transmission links have limited capability. POWERGRID is implementing a 500 MW 400 KV link between Jaypore-Gazuaka which is expected to be completed in about 4 years time. This inter-regional link would

facilitate effective transfer of power from eastern region to southern region.

5.6 Asked about the steps taken for transmitting the projected capacity (100,000 MW) at the end of Eighth Five Year Plan, the CMD PGCIL stated as under:-

"Actually this 100,000 MW consists of what is coming from the States and what is coming from the Central Sector. As far as the power generated from the Central sector is concerned, we are taking care of it. What is coming in the state sector, the State Government has to come and do the job. We have given an investment projection of about Rs. 13,000 crores during Ninth Plan. We have already mobilised about Rs. 5000 crores. We are having some discussions with the Merchant Bankers for arranging loan to us or for the equity/loan issue."

5.7 Asked about the measures taken to evacuate power from private generating units coming up in various States the Ministry of Power in a written reply stated:-

"The power evacuation system for 9 out of 11 power projects cleared by CEA (both Thermal and Hydro) has already been finalised. For the remaining 2 projects the same is under finalisation. The transmission system are required to be constructed by the concerned States while POWERGRID comes into picture for evacuation of power from Central Projects and construction of inter-regional links. No generation project is being cleared by CEA without examination of the evacuation system.

Since a large number of private power projects are expected to come up in the near future inter-regional links have been planned by POWERGRID and one is already in position. Vindhychal Korbi Chandrapur-Ramagundem with back to back is under erection and Jeypore-Gajuwaka has recently been cleared by the Union Government. Others like Mau-Bihar Sherif are under the consideration of CEA."

5.8 Enquired about the steps being taken to make sure that concerned State Electricity Board (SEBs) make investment on new transmission facilities needed to evacuate power from private generating stations. The Ministry of Power in a written reply stated:-

"The transmission systems needed to evacuate power from private generating stations are identified well in advance based on System Studies. The schemes are accorded techno-economic clearance by CEA where the estimated cost of the transmission facilities is

more than Rs. 100 crores and processed for investment approval by the Planning Commission. In the case of schemes costing less than Rs. 100 crores, the investment approval is accorded by the concerned State Government. The provision of funds for these transmission schemes is examined by CEA during the Annual Plan discussion and adequate funds are recommended each year."

5.9 Asked about the consequence of handing over distribution to private sector, the Secretary, Power stated during oral evidence:-

"Giving distribution to the private sector is a complicated exercise. We are attempting this exercise. It is because we have to separate generation from distribution and then carve out a small portion of SEBs and then hand over those assets to the private sector. It is complicated exercise which we are now attempting it after attempting to privatise generator."

5.10 On the question of involving cooperative societies in distribution work, the Secretary, Power stated:-

"That is entirely a feasible proposition. If there can be a well-organised rural cooperative society, it would be very good. REC is working on this. At present about 40 cooperatives are there which are doing distribution."

5.11 The policy to invite private sector in power includes the areas of distribution and transmission as well besides generation. As a matter of fact distribution of Noida has already been handed over to a private company recently. There are a couple proposals in which MOUs have been signed to hand over distribution of two cities in Orissa to private companies. Similarly, it is proposed to invite private sector participation in HT transmission network. Detailed guidelines in this regard are reportedly being worked out.

## **B. INSTALLATION OF INTER-REGIONAL LINKS**

5.12 Substantial quantum of energy resource remains unutilised over the year in different regions as at certain times of the day/season generating stations in one region have to be backed down while simultaneously there is perceptible power shortage in the neighbouring region. It has been estimated that with installation of inter-regional links about 6500-6700 MU of additional energy can be generated through improved hydro-thermal mix of combined regions.

5.13 According to Power Grid Corporation of India Limited, the extent of unutilised energy due to backing down of generation during the last four years was as given below:-

**Backing Down of Generation (Gwh)**

Region	1990-91	1991-92	1992-93	1993-94
Northern Region	4,559	3,644	2,676	1,950
Eastern Region	74	213	-	900
North-Eastern Region	-	-	-	-
Southern Region	393	1,068	265	146
Western Region	8,438	4,779	5,699	6,655
<b>Total</b>	<b>13,458</b>	<b>9,704</b>	<b>8,640</b>	<b>9,651</b>

5.14 The Sub-Committee enquired whether it is a fact that if power-surplus states could transfer power through inter-regional links, the power deficit in the country can be brought down by half. The Ministry of Power indicated in a written reply that All India shortage during April 94- January 1995 was 20,597 MU (7.1%). The Ministry of Power stated that three power surplus States viz. Himachal Pradesh, Goa and Meghalaya had a surplus of only 853 MU against an All India shortage of 25495 MU. This shortage could be brought down to 20597 by the exchanges from surplus States/off-peak surplus from regions to deficit areas.

5.15 Explaining that inter linkages of electrical regions reduce the total power reserve, the CMD, PGCIL stated during evidence:-

“As per our estimates, the total installed capacity will be around 100,000 megawatts at the end of the Eighth Plan and nearly 10,000 megawatts of power can be saved by establishing various inter-regional links and the demand can be reduced to that extent. One grid can come to the rescue of the other. In that way 10,000 megawatts of power which in terms of money values comes to Rs. 40,000 crores can be saved.”

5.16 Power Grid Corporation of India Limited stated that on a rough estimate it will cost approximately Rs. 10,000 to Rs. 15,000 crores for building basic infrastructure facilities like inter-regional links and system control and co-ordination frame work in the next 8-10 years. PGCIL also stated that if the facilities like inter-regional links and system control and co-ordination frame work are to be built

through raising resources from financial market and charging full commercial tariff to start with, there will be additional burden of capital servicing cost on SEBs. PGCIL has emphasized in this connection the need for budgetary support supplemented with initial subsidy for a period of 5-10 years on the capital servicing cost of these facilities while SEBs and power sector are being restructured to bear full commercial cost of all the facilities in the long run.

5.17 Asked about the Ministry's plan in this regard, the Ministry of Power stated in a written reply as follows:-

"While the Ministry has not yet taken a firm view about the role to be assigned to the private sector in construction of ENVAC & HVDC transmission lines. However, the exercise of involving private efforts and resources has already begun. POWER GRID has signed a MOU with National Grid Corporation of UK for setting up a joint venture for construction of such lines and approval of Union Cabinet for formation of this joint venture company is awaited."

5.18 Pointing out that Independent Power producers are concentrating their projects in regions/States which offer better infrastructure facilities and are relatively better managed. The Sub-Committee desired to know how the Government proposed to this overcome imbalance. The Ministry of Power in a written reply stated:-

"The independent power producers cannot be dictated on the location of their investment. The fear about neglect of balanced regional and social development seems to be based on the premise that the private sector is to take over the entire capacity addition programme. This is not the case. The public sector will continue to play a major role in the power development programme which will provide the necessary balancing aspect. Moreover, with the move in the direction of integrating the regional grids into one national grid, inter-regional transfer of power will become possible."

### C. PRIVATE SECTOR HYDEL PROJECTS

5.19 As against the desired hydro-thermal mix of 40:60 for providing peaking support and to prevent sub-optimal level operation of thermal plants during off-peak hours, the present ratio as reported by the Power Secretary is 27:73 on all India basis.

5.20 As per the reassessment of economically exploitable hydro electric potential of the country made by the Central Electricity

Authority during 1978-1987, the installed capacity of large H.E. Projects would be of the order of 1,30,000 MW. As against this the total installed capacity of such hydro schemes completed so far in the last 97 years is only 15,498 MW. The MW potential exploited so far accounts for only 14% of the total potential and that under exploitation amounts to an additional 7% of the total potential. Thus bulk of the potential remains to be harnessed.

5.21 The report on Perspective on National Power Development upto 2006-07 issued in September, 1991, has recommended that the share of hydro power in the overall mix of generation at All-India level needs to be improved to at least 34 per cent (increase beyond this percentage is not found to be economically viable) by the end of 2006-07 by adding hydro capacity of the order of 52,000 MW over the 15 years period since 1992. Even to achieve the above objectives, the perspective plan studies have identified certain pre-requisites such as:-

- Allocation of adequate funds.
- Ensuring timely cash flows.
- Formulation of regulations for expeditious acquisition of land.
- Evolving mechanisms for early environment & forest clearance and resolution of rehabilitation problems.
- Evolving mechanism for resolution of inter-state disputes.

Asked about the target for improving hydro-thermal mix, the Power Secretary stated during evidence:-

“According to the calculations made by the CEA, in the Ninth Plan, we will be able to make up the difference by another two per cent and not more.”

5.22 The 8th Five Year Plan document recommends that the ideal hydro-thermal mix of 40:60 should be reached by the end of 9th Five Year Plan.

5.23 Asked about the progress made by private investors in hydel projects, CEA furnished the following information:-

	No. of Schemes	Total Installed Capacity(MW)
Schemes cleared by CEA	3	790
Schemes under examination in CEA	3	586
Other projects for which MOUs have been signed and project reports are awaited	20	2789.5
<b>Total</b>	<b>26</b>	<b>4165.5</b>

5.24 The Ministry of Power claimed that considering the complexity, the environment regulations, long gestation period, heavy cost in civil construction, greater construction risks, hydrological risks, displacement and other environmental problems etc., the progress in hydel projects is bound to be slow compared to thermal projects. Thus, the response for setting up of 26 hydel projects from private sector can be considered satisfactory.

5.25 The Ministry of Power informed that apart from this efforts to add hydro capacity through the central/joint sector corporations viz. NHPC, NJPC, THDC, NEEPCO and DVC is also on. At present four hydro projects are receiving world bank assistance, 5 OECF funds and two bilateral assistance. The total capacity of these projects is about 5400 MW. More and more hydro projects are being poised for external assistance. It is sanguinely expected that hydro projects would play a much more dominant role in the near future.

5.26 During oral evidence of the Ministry of Power, the Secretary, Power stated:-

"We have a fairly good hydel potential. Sometime in the 70s the emphasis was changed from hydel to thermal. But from 1971-72 it has come down. So this definitely is an area which we have to improve".

5.27 Pointing out that only a few private investors are making actual progress in hydro projects, PHDCCI explained the barriers in this regard as below:-

- It would be quite hard for any private company to build a Hydro Station without (a) Geological, (b) Hydrological of (c) Topographical data. However, these are treated as "Classified" by the concerned agencies. Topographical Sheets for most parts of the world are available freely abroad, yet the Survey of India would not part with them. Procuring Hydrological data from CWC/Ministry of Water Resources is all the more difficult.
- It is well known that the hydro projects have higher gestation period than thermal/gas. Consequently they require special dispensation towards treatment of equity by allowing interest payment on equity during construction period.
- For the Thermal/Gas projects an ROE of 16% is attractive but not for hydro. Considering the long gestation period and the geological/hydrological risks, this needs be revised upward to a viable level.
- Hydro projects have large civil component which require rupee funding. At present there is a limitation of 40% funding by the Indian Financial Institutions. On the other hand the equipment component is relatively a small portion of the overall investment. Therefore, with the present cap on Debt by IFIs and the limited ECA borrowings, hydro projects face a wide gap of long term cost-effective funds.

5.28 Asked the steps taken for encouraging the private sector in hydel power, the Ministry of Power has also stated:-

"In a further bid to encourage private investment in hydro power, a separate policy for hydel tariff is under consideration of the Government of India."

5.29 In this context Ministry of Power in a written reply furnished to the Committee stated:-

"The Ministry is fully aware of the deterioration in the thermal hydro mix. A number of steps in this regard have been initiated. However, for an impact to be made it would take sometime as hydel projects take much longer to materialise and also, in some regions due to inadequate hydro potential it is not possible to set up too much capacity based on hydro power. New hydro projects



are being sanctioned e.g. in West Bengal 900 MW pump storage scheme has been sanctioned and OECF funding arrangement made for it. In Kerala which is highly dependent on hydel power, Kayamkula based on Naptha is being set up by NTPC after it obtains the necessary CCEA approval to ensure proper hydro thermal mix. Also by having inter-regional HVDC links, a better hydro thermal mix can be obtained."

5.30 The State Government of West Bengal in Memorandum furnished to the Sub-Committee stated that though power availability position in the state has improved since establishment of power stations both in Central and State Sector there still remains a shortage during peak hours mainly due to poor thermal-hydel mix. During the study visit the representatives of West Bengal State Government informed the Sub-Committee that the share of thermal power in the overall supply in the state is as high as 99.2% which is responsible for the adverse peak-off ratio. This has caused frequent backing down of thermal plants with adverse effect on the life of the equipments.

5.31 Asked about hydro power potential and the extent of exploitation in North-Eastern Region, the Ministry of Power stated in a written reply:-

"The total hydro-electric potential of North Eastern Region has been assessed by the Central Electricity Authority as 31857 MW at 60% load factor.

Out of this, projects with an installed capacity of 459.7 MW have already been set up. Projects with an installed capacity of 745.00 MW are under implementation. Projects with an installed capacity of 108.0 MW have been cleared by Central Electricity Authority and are awaiting investment approval. Projects proposals with an installed capacity of 27096.5 MW have been returned by C.E.A to project authorities for resubmission after complying with various statutory and other requirements. 19 major schemes with installed capacity of 6126 MW are in various stages of investigation."

5.32 When it was pointed out that hydro potential in the North-east has not been fully exploited the Secretary, Power stated during evidence:-

"I agree with you that the hydel potential of the North-eastern region has not been tapped fully. But, we have not got the environmental clearance. These steps are still going on. The problem in the North-eastern region is, invariably there are very strong considerations from E&F angle. I am entirely with the hon. Member that we must play a more active role in this."

5.33 The problems of in development of Power project in the N.E. Sector as indicated by NEEPCO are as follows:-

- Difficulty in land acquisition.
- Law and Order situation.
- Constraint of funds in N.E. Sector.
- Lack of proper approach roads to the project sites,
- Restricted areas permit and Inner line pass.
- Geological problems in Himalayan terrain.

5.34 Tamil Nadu State Electricity Board has informed that out of 4100 MW hydro power potential in Tamil Nadu only 1948 MW has been harnessed. Out of the balance 1956 MW, 1463 MW of power could not be taken up due to inter-state aspects. TNSEB has therefore, suggested that all the inter-state hydel projects can be executed through a National Agency such as NHPC and power so developed shared among the concerned States.

#### **D. RENOVATION AND MODERNISATION**

5.35 According to CEA, present indications are that country will face peaking and energy shortages to the tune of 28.2% and 14.5% respectively at the end of Eighth Plan. This estimate is based on the assumption that a new capacity addition of about 20000 MW will take place during this plan period. To meet the gap in supply and demand, it has become imperative that new alternatives which are not as capital intensive as installation of new plants and which could be implemented in a shorter time span are explored. Renovation & Modernisation, including extension of life of old thermal power plants (Thermal Plants constitute more than 70% of the total installed capacity in the country) is one such option.

5.36 R&M Programme (Phase-I) was approved by the Government for implementation during Seventh Plan period. To mitigate the financial difficulties of the SEBs in implementing the schemes under this programme, Central Government agreed to provide Central Loan Assistance (CLA) for 'core' activities of each scheme.

5.37 R&M Programme (Phase-I) covered 163 units of 34 thermal power stations totalling 13,655.5 MW in installed capacity. Latest sanctioned cost of these schemes is Rs. 1,174.00 crores, out of which activities under CLA amount to Rs. 743 crores. This programme

envisaged an increase in generation of 7,000 MU-Year to increase the plant load factor of these stations to 53% from pre-R&M value of 46%. Out of total 1,763 number activities, a total expenditure of Rs. 971 crores has already been incurred on these schemes till 11/94 completing 1564 activities. Additional generation to the tune of about 10,000 MU/Year has reportedly been achieved during the period 1990-94 where substantial R&M activities have been completed.

5.38 The Phase-II R&M Programme intended for completion during 8th Plan was launched in 1990 under which 47 old thermal power stations involving 213 units aggregating to 21,671 MW have been taken up for R&M. Latest sanctioned cost of the schemes is Rs. 2,105 crores.

5.39 There are a total of 1034 number activities, out of which 327 have been completed till date. Programme is scheduled to be completed by 1996-97 but is likely to slip as many States are facing financial constraints in funding R&M schemes. Some of the SEBs, which meet conditionalities of Power Finance Corporation are getting loans from it for their R&M schemes. PFC is funding upto 70% of the cost of such schemes. Some schemes are being partly funded by World Bank. States which have to rely on State Plan funds for execution of these schemes are finding it very difficult to arrange resources for R&M schemes due to which this programme is moving at a very slow pace.

5.40 In addition, a programme to renovate 55 hydel stations comprising 194 units with total installed capacity of 9,658 MW is also on the anvil. This programme is likely to yield 6,709 MU per annum as additional generation.

5.41 R&M Programme (Phase-II) of thermal units is likely to yield generation of 8,750 MU/year. This generation incidentally, is equivalent to 1,770 MW of new capacity addition at a PLF of 55.3%. Similarly additional generation of 6,709 MU/Year expected after R&M of hydel units is equivalent to new capacity of 2,196 MW at a load factor of 34.9%. In other words, R&M of thermal & hydel units in the country is expected to create effectively a new generating capacity of 3,966 MW at a total cost of Rs. 3,365 crores.

5.42 In a Memorandum submitted to the Sub-Committee Confederation of Indian Industry stated that at the end of 1992, Installed Capacity was 72,000 MW., Peak Demand was 45,000 MW., Peaking Shortage - 19%, Energy Shortage - 10%, PLF National Average -55.3%. These figures reflect under utilisation of installed capacity and sub-optimal performance of Power sector due to old age

of power plants, management structure & human issues, irregular maintenance activities, inefficient sub-systems/functions.

5.43 The Electric Power Research Institute (EPRI). California, has worked out a chart which provides the American experience on ageing of power plants. A reasonably well maintained system would operate at 80% in the first 10 years, down to 75% at the end of the 20th year, and down to 50% at the end of the 30th year. A life extension programme can restore the plant to its original level for another 20 to 30 years. What is more important, the cost of the life extension would be no more than 20 to 30 per cent of the cost of a new power plant.

5.44 Taking the Indian experience CII stated that there is no reason why plant load factors cannot move up to 75% after a life extension programme, with availability of spares and a degree of maintenance. The potential is an extra 10,000 to 12,000 MW. In order to achieve this the following means could be adopted:-

- Revive old power plants through Renovation and Modernisation (R&M).
- Offer plants for R&M after carrying out residual life study & plant analysis.
- Inject competition through open tendering by inviting qualified overseas and Indian organisations.
- Encourage private investment by offering lease or (own) operate and transfer possibilities.

5.45 When the attention was drawn to the assessment made by CII, CEA stated in a written reply that the anticipated PLF after R&M from older units, which has been assumed as 75%, is not practically achievable. The performance of best performed units of series 200/210 MW and 500 MW, mostly designed for present coal quality, are operating at a PLF of 68.5% and the performance of older units would be even lesser until and unless considerable changes in the boiler design etc. is feasible and carried out in a cost effective manner. The 62% PLF for these older units would be a reasonably fair assessment of anticipated performance level from such units.

5.46 Clarifying the position regarding the potential assessed by CII, CEA indicated the following figure:-

	As per C.I.I.	As per CEA's General Review
(i) Total capacity of units of more than 25 yr. age	11856	7547
(ii) Av. PLF of above capacity (93-94)	32.5	31.2
(iii) National Av. PLF (93-94) for fossile fired units of sizes more than 20 MW	60	60
(iv) Latent potential at 68.5%	4275	2815

5.47 Explaining the position further the CEA stated as under:-

"As per CEA, the capacity (as in 3/94) of existing fossile fired thermal units (after deleting retired capacity) having more than 25 years of age and sizes more than 20 MW is 4762.5 MW and their average PLF during 93-94 was 38.5%. Assuming an achievable PLF of 62% from these older units, after carrying out R&M, the probably potential of generation from these units works out to 1126 MW compared to the potential of 4275 MW worked out by CII. This would be subject to extension of life by 15-20 years in a techno-economic manner.

If we consider the total existing capacity of all fossile fired units of sizes below 200 MW more than 20 MW irrespective of their age which amounts to 14,919.5 MW and operated at 41.8% PLF during 93-94, the total maximum probable potential to achieve a PLF of 62% by such size units works out to 3056 MW.

However, it would be difficult to confirm the exact quantum of potential which could be obtained by R&M in a techno-economical manner until and unless the life assessment of all the units is carried out and techno-economic feasibility study is completed."

5.48 The sub-Committee observed that under the new power policy only the proposal had been recieved from a private company

for R&M. Asked about the reasons for private investors not evincing interest in R&M projects, CII stated:-

"Presently there is no adequate comprehensive policy guideline attracting private investments for R&M projects. A comprehensive policy should be framed and put in place encouraging private investment by offering lease or own operate and transfer facilities."

5.49 During the visit sub-Committee to NTPC power station at Farakka, it was informed that NTPC is making efforts to utilise its experience in improving the performance of State sector power stations either by take-over and turn-around or by offering its services for Renovation and Modernisation.

5.50 During on the spot discussions held at Calcutta a representative of West Bengal Government stated that renovation of old plants in general may cost Rs. 46 lakhs per MW approx. if the work is taken up alongwith modernisation, the cost would be approximately Rs.1 crore per MW at the most.

5.51 Asked about the time-frame for R&M of a plant, the Chairman, CEA stated:-

"Each scheme has to be gone into detail. Each scheme will take about 4-5 years after we decide about it."

The Secretary, Power stated in this context:-

"We have now given high priority for systems improvement and R&M. That is the change in our policy. Earlier we have given it much lower priority."

5.52 Asked about the priority given by Power Finance Corporation for financing R&M project, the Secretary, Power stated:-

"Earlier they were going in for generation. Now they are giving higher priority for system improvement and are which has been neglected gravely. I am glad in the last decade they have worked on that priority area. The PFC was set up mainly to take care of the problems of the Power Sector which also include R&M Funds."

5.53 Asked about the specific incentives offered for private sector in respect of R&M projects, Ministry of Power stated in its reply that, "the investors have so far focussed more on generation projects, apparently because R&M has more complexities. We already have one R&M proposal in the private sector. The detailed guidelines in this regard are being worked out to give a greater push to private sector participation in this field."

5.54 CEA informed the Sub-committee in a written reply that "modalities for participation of private sector in R&M are being

worked out. A working group has been formed to prepare the detailed guidelines for various modes of induction of private sector in R&M programme. The report highlighting the various issues involved is under preparation.

## E. DEMAND MANAGEMENT

5.55 Stressing the importance of efficient management of demand side option, CEA stated that it is necessary that programme with specific targets for promoting conservation and improved energy efficiencies in identified specific areas are formulated and implemented in a time bound manner so as to ensure overall timely national gains.

5.56 A perspective plan upto year 2006-07 prepared by CEA envisages that by the end of the 10th Five Year Plan about 15,000 MW could be saved if demand management measures were taken up in earnest. Another 15,000 MW can be saved by way of energy conservation methods. Thus demand management and improved conservation could at the most save about 30,000 MW by 2006-07. However, this is insignificant compared to the required capacity addition of 142,000 MW as estimated in the same perspective Plan. Therefore, demand management and conservation measures cannot completely replace the capacity addition in generation/distribution in meeting the demand for electricity. The Ministry of Power has pointed out that conservation and demand management measures by themselves will not be able to take care of the future demand of India's growing economy and the domestic sector. The Government has to be realistic and pragmatic in its planning, especially when the Power Sector is the very backbone of nation's future.

## PART B

### Recommendations and Conclusions of the Committee

1. The policy to encourage greater private sector participation in Power Sector was introduced in 1991 to augment resources and to supplement the efforts of the public sector. However, the Committee's examination reveals that there appeared to be an on-rush of transferring of public sector power projects to private sector thereby diluting the objective of the policy. The Sub-committee's visit to some States brought to light at least three such cases. In one case 50% of the work is stated to have been completed before the project was transferred to a joint sector company. There could be more of such cases. This can, however, be brought out only through a comprehensive review by the Government. The Committee, therefore, require the Government to undertake such a review and assess the impact of the new policy on public sector projects. The new policy also has some disquieting features and indicate undue incentives to private sector which need a thorough review. The new policy is not comprehensive and appeared to have resulted in high cost projects. The Committee observe that not a single MW of capacity has been added by the Independent Power Producers even after a lapse of over three and half years since announcement of the new policy. Only one company is reported to have achieved financial closure in March, 1995. There appear to be no likelihood of the project being commissioned during the 8th Plan period. The various issues arising out of the Committee's examination of the subject are brought out in the subsequent paragraphs.

2. Establishment of a transparent bidding procedure and a set of criteria against which bids could be evaluated is essential for selecting appropriate power companies for Power Projects. Sadly, this was not done until recently. Instead of taking advantage of international experience in promoter selection, the Government preferred to go in for the bilateral route on the plea that in view of non-crystallisation of methodologies and lack of investors' confidence the negotiated route was the only option. It was only after the matter was taken up by the Committee, the Centre issued guidelines to State Governments on 18.1.1995 making the competitive bidding route mandatory. Hopefully, the change over to the system of competitive bidding would bring transparency to the business of private sector participation and result in competitive tariff proposals.

3. Incidentally, the Committee note from media reports that one State Government signed as many as 23 MOUs with potential



private investors to beat the deadline fixed by the Central Government for switching over to the competitive bidding route and sought further time to accommodate 42 more applicants. The Committee in this connection feel that there is a need to weed out non-serious proposals. Currently, 136 projects in all are stated to be at various stages of negotiation. The Committee find from the information furnished by the Ministry of Power that the validity period of some of the MOUs signed by State Govts. is as long as five years. The Committee feel that a long time lag for finalisation of a project will hinder the goal of achieving faster growth of private sector and preclude opportunities for genuinely interested investors. The Committee, therefore, recommend that the Govt. should examine the reasonableness of the validity period allowed in MOUs signed so far and, if found unreasonable, issue suitable guidelines to weed out non-serious as well as high cost project proposals. The guidelines should also emphasise review of MOUs keeping in view the load requirements of a particular State and the need to avoid over-concentration of projects.

4. The current power policy provides 16% return on equity at 68.5% PLF with additional incentive upto 0.7% of return for each percentage point of additional PLF. The Committee find that at 68.5% PLF the equity internal rate of return (IRR) of some of the gas based projects cleared by CEA is in the range of 12.6% to 15.85%. The Committee learn that according to the Electric Power Research Institute of California, a reasonably well maintained power plant would operate at 80% in the first 10 years and at 75% at the end of the 20th year. The Committee in this connection observe that most of the private power projects cleared so far have been guaranteed off-take of power well above 80% PLF or allowed third party sales. The return on equity at a normally achievable PLF of 80% is upto 24.5% with corresponding rise in IRR. Viewed in this background, the Committee feel that the equity return of 16% at a lower PLF of 68.5% allowed to investors is questionable and calls for a review. The Committee accordingly recommend that on the basis of experience gained so far and in the light of public debate on the issue, the PLF linked equity return should be reviewed and appropriate correctives applied so as to bring it to reasonable matching of rate of return and PLF in the national interest.

5. The tariff structure based on 'cost plus' approach is stated to have advantages in the initial phase because of compatibility with CEA procedure for project approval and SEBs' own experience with this form of pricing. Surprisingly, the Ministry of Power has argued that there is nothing wrong with the present cost plus approach. The Committee do not agree with this view. The Committee feel

that private investors appear to have a tendency to inflate costs which would finally translate into higher tariff. Besides, the cost plus approach has given rise to avoidable controversies. The Committee, therefore, recommend that the Govt. should examine the desirability of adopting a standard practice of specifying a single rate at which private investors are asked to sell power. Incidentally, adoption of simple tariff system will also eliminate the need of offering guaranteed PLF linked return on equity.

6. There are four gas based and 3 coal based power projects in the private sector cleared by CEA so far. Out of the four gas based projects the per megawatt (MW) cost in respect of three projects (Jegrupadu, Godavari and Puguthan) was between Rs. 3.52 crores and Rs. 3.74 crores while for Dabhol, the cost per MW was Rs. 4.19 crores. Of the three coal based projects, the cost per MW of Vishakhapatnam project at Rs. 5.82 crores is considerably higher than the Ib valley at Rs. 4.82 crores and Mangalore project at Rs. 5.08 crores. BHEL in this connection has pointed out that turn key costs in respect of projects with BHEL equipment could cost only around Rs. 3.6 crores to 4.3 crores per MW after making suitable adjustments for development cost, inflation and interest during construction. The cost per MW of private projects in general and Dabhol and Vishakhapatnam projects in particular appear to be much higher than that indicated by BHEL. The Committee feel that guaranteed rate of return is tempting the investors to inflate their costs to ensure better returns. According to experts, lack of competitive bidding has led to significant padding in the investment costs. The Committee desire that the Govt. should ensure that cost of private power projects is so determined as it conforms to the simple tariff structure recommended in the preceding paragraph. Efforts should also be made to dispel doubts with regard to reasonableness of the cost of private power projects.

7. The Committee observe that to the extent the PPAs either guarantee off-take of power or make arrangements for financial recompense of plant availability at levels significantly greater than the peak load demand for power, they imply that the existing power generation plants will have to 'back down' well beyond present rates thereby making them inefficient and financially non-viable. This alone would significantly increase the average cost of power to the consumer. The Committee, therefore, urge that CEA should conduct critical review of such PPAs and ensure that interest of consumers as well as that of the economy is safeguarded.

8. The controversial counter guarantee instrument is stated to be a product of investor misgiving about the reliability of SEBs.

According to the Ministry of Power counter guarantee from the Government of India has been envisaged as a transitional measure for SEBs' payment obligations in respect of a few initial projects. It has so far been signed only in respect of Dabhol and Jb valley projects. The Dabhol Power Company informed the Sub-Committee during informal discussion at Bombay that the DPC neither insisted nor expected any guarantee on payment obligation, except may be from Govt. of Maharashtra and that following announcement of the policy of counter guaranteeing by the Govt. of India the company took advantage of it. In the opinion of the Committee, counter guaranteeing for any project is uncalled for since several IPPs are ready to implement projects without any counter guarantee. Also, there appears to be no justification for giving counter guarantee only to selective fast track projects. It is observed from the information furnished to the Sub-Committee that the counter guarantee extended to the Dabhol Power Company is to expire after 12 years or at the earliest after several specified events. The Committee are, however, not clear about the events which would forestall the guarantee. In any case, once the concerned SEB becomes financially viable, there is no case for the Centre to continue as a guarantor. In case the agreement does not contain a provision to this effect the agreement ought to be amended to incorporate the same. The Ministry has suggested various alternatives to counter guarantee such as direct supply of power by private projects to HT consumers; opening of a Escrow account, Blended counter guarantee, PPA with Power Grid Corporation, Escrow arrangement with central devolution; World Bank guarantee, etc. The Committee are of the view that the Power Ministry's set of alternatives addresses the symptoms and not the disease plaguing the electricity sector. What is required is a clear and time bound programme of action to make SEBs viable as discussed in the succeeding paragraph.

9. The Private Power Development could effectively take-off only if the financial health of SEBs improve. At present most of the SEBs operate at sub-optimal levels of capacity utilisation, have negative rates of return and increasing commercial losses. In order to restore the financial health of SEBs, as rightly pointed out by the Planning Commission, immediate measures are required to rationalise tariff, to improve operational efficiency and to bring about an all round improvement in the billing and collection system, cost control efforts, optimum management to human and other resources, etc. All this call for a careful review of the existing organisational structure of SEBs. The Committee in this connection observe that the process of restructuring SEBs has been set in motion. In Orissa, the State Government has initiated the process of restructuring its

SEB. The SEB of Meghalaya is reported to have been abolished and its activities handed over to private companies. Five SEBs are undergoing reform studies and one more State Government is to get its SEB studied by a consultant. The Committee have been informed that 18 States and Union Territories have agreed to fix tariff at the minimum rate of 50 paise per unit and 12 SEBs have signed their operational and financial action plan with the Power Finance Corporation. The resistance, if any, to tariff revision is apparently due to inefficient service by SEBs. The Committee feel that the reform process cannot wait beyond the 8th Plan period. The Committee, therefore, urge that the remaining State Governments/SEBs should be persuaded to fix tariff so as to earn the statutory minimum return of 3% and also to implement reforms keeping in view the need to make SEBs viable and vibrant.

10. Power Purchase Agreement (PPA) is basically a commercial contractual agreement between the SEB and the generating company. The PPA allocates the risks associated with a power project, including fuel prices and other operating costs, financing costs, construction costs and various performance parameters. The Committee feel that it will be useful if a measure of uniformity could be achieved on the factors common to PPAs. The scrutiny of PPAs should be made a part of techno-economic appraisal by the Central Electricity Authority. The Committee desire that instructions in this regard should be issued early.

11. The confidentiality of Power Purchase Agreement and Fuel Purchase Agreements (FPAs) have sparked intense debate in the media and in various other forums and there is widespread perception of biased contracts. It is observed that a confidentiality clause has been inserted in the PPAs for Dabhol Power Company and some others. Such lack of transparency is regrettable, as it precludes public scrutiny and gives rise to avoidable misgivings. The Committee, therefore, desire that the Government should issue guidelines requiring the SEBs/State Governments to make all the PPAs and FPAs public documents with the exception of any confidential data contained therein.

12. Emphasis has been laid by many experts on the need for establishment of an independent regulatory body for power sector on the lines of similar organisation in countries like USA. The Committee observe that the CEA was charged with the responsibility of developing a sound and uniform national power policy in a situation where more generation was in the public sector. For meeting the changing situation, there is a need to re-orient its role consistent with the growing presence of the private sector in the field of

power. At the instance of the Committee, the Ministry of Power has proposed to reorient CEA to discharge the function of a Regulatory Commission. The Committee hope that this task will be completed soon and the Committee be informed of the outcome.

13. Success of the power policy to a considerable extent depends on an integrated fuel policy. This is however not the case today. In the absence of comprehensive fuel policy there have been proposals to set up hydro carbon or diesel based power projects. Considering the fact that the availability of indigenous natural gas and petroleum products are limited and these are the best feed stocks for both fertilizers and petro-chemicals, the question of using these as fuel for power projects requires examination and calls for a clear policy guideline. A policy decision in this regard is stated to be under consideration of the Government. The Committee desire that a comprehensive fuel policy should be laid down. The Committee further desire that at the time of finalisation of project proposals. Fuel Purchase Agreement should be taken into consideration. The Committee find in this connection that guidelines for fuel supply arrangements and for coal transportation by Railways also have not yet been finalised and are stated to be under preparation. The Committee urge that the guidelines should be framed and issued expeditiously.

14. As regard gas supply, there have been complaints about the quantity and quality of gas supply to power stations and the contract signed by users with the Gas Authority of India Limited is stated to be a one way contract. There is no legally enforceable agreement to ensure a committed supply of gas. According to the Power Secretary, "this is something on which we have not so far made anything." The Committee desire that the matter should be taken up with the Petroleum Ministry and a feasible solution worked out to remove the lacuna.

15. Most of the private sector projects cleared by CEA envisage import of equipment for the main plant. As admitted by the Ministry of Power domestic manufacturing capability would be affected to that extent. The Committee in this connection observe that the BHEL with production capacity of 6000 MW per annum had orders just for 5034 MW as on 1.4.94 as against the requisite order book position of about two to three years' production. According to an expert due to lack of competitive bidding, the cost of equipments in the private power projects has been hiked up. The Committee do not agree with the Power Ministry's view that it would be difficult to compel the private investors about the modality to be adopted by them in sourcing their equipment. The Committee see no reason

why international competitive bidding should not be made mandatory for private projects in the matter of procurement of equipment. The Committee require that this should be done forthwith keeping in view the need to get competitive price for equipments. Incidentally, this will also enable BHEL to participate in the bids. The Committee are distressed to find in this connection the Government's stand against providing counter guarantee for the commercial borrowings of BHEL which is a public sector undertaking while counter guarantees have been extended to private sector projects. The Committee recommend that Government should provide necessary facilities to BHEL so that it can also offer sales aid financing as offered by international equipment manufacturers.

16. The Committee observe that the Government has taken various steps to allow more flexibility to the Central Power Generating Organisations in their commercial operations. The Committee in this connection note National Thermal Power Corporation's plea that for expeditious decision-making in the case of projects where no budgetary support is contemplated from the Government, the authority for investment approval may be vested in its Board. The Power Ministry has, however, taken a stand that investment decisions need to be considered by the Government to scrutinise various aspects such as external commercial borrowings, justification for the project in a particular region, maintaining regional balances etc. The Committee urge that there should be no avoidable time lags in investment approvals for public sector projects and clearance should be accorded within a specified time frame. The Committee also desire that the question of giving approval to the completed cost as in the case of private sector projects needs to be examined with a view to providing level playing field to public sector projects and the Committee be apprised of the outcome.

17. The Committee desire that the Central Public Undertakings like BHEL and NTPC should come together and explore the possibility of taking up power projects on joint venture basis along with Electricity Boards.

18. The Committee are distressed to find that no serious attempt was made for over two and half years to implement the 210 MW Neyveli Lignite Corporation Zero Unit Project which was sanctioned by the Government in March 1989 at an estimated cost of Rs. 396 crores. It is amazing that orders for procurement of power plant were not placed during the period of over two and half years after sanction of the project. Over 32 months were spent on negotiations with suppliers without actually placing orders. If any thing, this indicates lack of seriousness on the part of authorities

and those at helm of affairs who were entrusted with the task of implementing the project. The Committee require that the matter should be investigated with a view to fixing responsibility for gross failure in implementing the project as sanctioned. The Committee feel that had the administrative Ministry taken action-oriented review meetings to monitor the project implementation, the project could have been implemented as per the original plan. The Ministry of Coal owe an explanation in this regard.

19. What is worse, the 'Zero Unit' project was transferred from the public sector Neyveli Lignite Corporation to a private investor in the circumstances which give rise to serious suspicion about the bonafides of the transfer. The Committee found on scrutiny of original files that on 26th November, 1991 a private investor wrote to the then CMD of NLC proposing to put up the zero unit plant. On the very next day i.e. on 27th November, 1991, the proposal was considered by the NLC Board of Directors and a letter was also sent on the same day by the CMD to the Coal Secretary suggesting consideration of the proposal of the private investor on the claim of inadequate funds with NLC. When the Sub-Committee undertook on the spot study visit to NLC the officials of NLC however informed that NLC was in a position to put up this project on its own without budgetary support and it had even laid foundation stone for the unit. The investor was reported to have experience in software, communication and broadcasting and real estate and do not have any experience in matters relating to power. The Committee require that an independent probe into the circumstances in which the project was transferred from NLC to a private party should be got conducted and facts brought to light.

20. It is distressing to find that the cost of the Zero Unit project now being set up by the private company viz. (ST-CMS) Electric Company is Rs. 1325 crores i.e. Rs. 5.3 crores per MW as against the NLC's originally estimated cost of Rs. 397 crore i.e. Rs. 1.89 crore per MW. The present day cost of the unit taking into account various factors including scope of ST-CMS works out to Rs. 767 crores including cost of common facilities to be provided for the new location. The Committee could hardly believe that the present day cost of Rs. 767 crores when adjusted for completed cost (to be completed in 38 months) on turn key execution in private sector would rise to the order of Rs. 1325 crores. The Committee feel that something is seriously wrong in the cost index allowed by CEA for private sector. The Committee would like to be apprised of the details of the justification for the cost index employed by CEA while adjusting for completed cost of private sector projects.

21. The Committee are concerned to observe that a 600 MW Kameng Hydroelectric project which had been identified for implementation by the North-Eastern Electric Power Corporation (NEEPCO) as a central sector project and for which funds had been earmarked to enable investment approval and initiation of work has been shifted to private sector by the State Government of Arunachal Pradesh. According to Power Ministry, there are merits of continuing the project in the central sector in view of the stage of development, size of the project, inter-regional transfer of power and implementation of condition of environmental and forest clearance. On the question of implementing the project in the central sector, the Power Secretary was candid in his admission that "We did not pursue it the way we ought to have." Considering the fact that over two years have elapsed without any tangible progress since signing of the MOU by the State Govt. with private company at least now the Ministry of Power should take up the matter seriously with the State Govt. for executing the project in the Central sector. The Committee will await the Ministry's efforts in this direction.

22. The Committee learn that the State Sector Karbri Langpi Project which was partly financed by OECF has been transferred to a joint sector company in March, 1993. 50% of the work of the project had reportedly been completed at the time of transfer. It has been stated that OECF normally funds only public sector projects. Since then OECF has been requesting for adequate safeguarding of the equipment supplied under its loan. The Committee are not clear about the role of Central Government in the loan extended by OECF to the project and whether any attempt was made by the Centre to retain the project in Public sector. In view of the transfer of the project to a joint sector company it is also not clear whether commitments, if any, made to OECF can be fulfilled without violating its conditions. The Committee would await a clarification in this regard.

23. Transmission and Distribution have been a neglected area of the power sector in the past. It continues to be so even as per the current power policy. The Committee feel that this neglect of T&D will defeat the very purpose of setting up new generation capacity. T&D ought to receive about 50% of the total allocation of the power sector. The allocation of funds for T&D system under the plans particularly under the Sixth, Seventh and Eighth Plans has been very much less i.e. less than 30% of the total. As a result, the development of transmission systems has not been commensurate with the growth of installed capacity. The Committee are distressed to observe in this connection that the 600 MW power station at



Farakka is not able to operate at optimum level due to insufficient downstream T&D facilities in the Eastern Region. It is also unable to link up with the grid because of lack of evacuation facilities. The situation may further deteriorate with the commissioning of balance units of 1000 MW at Farakka. The Committee have been informed that the power evacuation system for 9 out of 11 power projects cleared by CEA has already been finalised and is required to be constructed by the concerned States. Considering the financial position of SEBs, it appears necessary to attract private sector to step up investments in T&D. Concrete policy in this respect, which is stated to be under formulation, must be finalised soon and steps should be taken to augment investment in T&D.

24. According to an estimate of Power Grid Corporation of India Limited nearly 10,000 MW of power can be saved by establishing inter-regional links at an approximate cost of Rs. 10,000 to Rs. 15,000 crores. This can be reportedly achieved through improved hydro-thermal mix of combined regions. The Power Ministry has not yet taken a firm view about the role to be assigned to the private sector in construction of these high voltage Transmission lines. The POWER GRID, however, has signed a MOU with National Grid Corporation of UK setting up a joint venture for construction of such lines. It should be ensured that the schemes of establishing inter-regional links are examined and taken up for implementation on a time bound programme after critical review of various aspects including load requirements.

25. The Committee are not impressed by the response received from private sector for setting up hydel projects. Only 26 schemes for a total capacity of 4165 MW have been so far received. The Committee in this connection observe that as against the desired hydro-thermal mix of 40 : 60 for providing peaking support, the present ratio is 27 : 73. Out of 1,30,000 MW of economically exploitable hydro electric potential in the country only 14% has been exploited so far. Non-availability of geological and hydrological data which are reportedly being treated as 'classified', and inadequate incentive to hydel projects considering their special problems are stated to be the reasons for private investors not evincing much interest and not making desirable progress in hydro projects. The Ministry of Power has informed that in a further bid to encourage private investment in hydro power, a separate policy for hydel tariff is under consideration. The Committee urge that this should be finalised early. The Committee also recommend that the issue regarding availability of geological and hydrological data must be examined and appropriate corrective measures taken so that private investors are not put to avoidable difficulties.

26. According to present indications of the Ministry of Power the country will face peaking and energy shortage to the tune of 28.2% and 14.5% respectively at the end of Eighth Plan. To meet the gap in supply and demand, alternatives which are less capital intensive and which could be implemented in a shorter time span are necessary. Renovation and modernisation of old plants is one such option. R&M of thermal and hydel units in the country is expected to create effectively a new generating capacity of 3,966 MW at a total cost of Rs. 3,365 crores. There is, however, only one R&M proposal in the private sector. There is a need to give a greater push to private sector participation in this field. The Committee recommend that guidelines under preparation must be finalised expeditiously and optimal performance of old plants ensured with private sector participation.

27. The Committee in their third report as well in the thirteenth report had pointed out that a reduction in Transmission & Distribution losses from 23 to 18 per cent can be easily achieved during the Eighth Plan period. The Committee had further emphasised that such losses need to be eventually brought down to a level of 15%. The Committee observe that various steps taken by the Government have helped reduction of T&D losses from 22.83% in 1991-92 to 21.80% in 1992-93 showing a reduction of 1%. The Committee desire that sustained efforts should be made to bring down the T&D losses to the level of 15%.

NEW DELHI ;  
29th May, 1995  
8 Jyaistha, 1917 (Saka)

JASWANT SINGH,  
Chairman,  
Standing Committee on Energy.

**Observations of an Hon'ble Member (Shri P.K. Agarwalla)  
on the Report**

1. While the installed capacity is given in Mega Watts (MW), the electricity generation is in million units (MU). The Report should also contain the capacity utilisation and if it has been low, why ?

2. In the Report there is emphasis on installation of new capacities to meet the anticipated shortages. And since there are resource constraints, justification is given for inviting the private sector and foreign entrepreneurs in the power sector. But it is unfortunate that very little attention is on the improvement in installed capacity at least in terms of the results achieved in this direction during the last few years. In this connection, I would mention a few aspects.

- (i) Transmission losses have increased to 23%, and if I am not wrong even upto 40% in a couple of State Electricity Boards. What steps have been taken in this direction and what has been the result ?
- (ii) Power sector is using high ash coal and the percentage of ash in coal supplied to the power sector is increasing year after year. But the Ministry of Power is reconciled with the arguments of the Coal sector that the Indian coal reserves are of poor quality. But the fact is that we have enough good quality coal reserves and it is primarily the method of mining that is resulting in poorer quality coal production. Thus, the power sector should insist on better quality coal from the coal sector.

3. There is an estimate by an independent agency that due to use of poorer quality coal, nearly 10,000 MW thermal power generation capacity is not being utilised. Also, there are Indian and foreign studies to show that with the use of lower ash content coal in the thermal power houses, there is an increase in the Plant Load Factor and other parameters. These should be focussed adequately in the Report. This is so because these routes are less capital intensive than the route of installation of only new generation capacities and the gestation lags are also lesser.

4. The rate of return of 16% to the private sector, the two tier electricity tariff involving recovery of fixed and variable costs are obviously based on capital costs. But what is the authenticity of these

capital costs? In March, 95 I had sent statement to the Power Minister containing capital cost of 23 private sector power projects based on news paper reports, showing therein that the per MW capital costs varied from Rs. 2 crore to Rs. 5.8 crore and in one case even Rs. 16 crores. This can be seen even from page 35 of this Report where the range of MW cost is Rs. 3.60 crore to Rs. 5.82 crore. Also, since these projects entail long gestation periods, for starting the project as well as for its completion, the base year for estimation of these costs is very important which is generally not known. But I have yet to receive a reply. My point is that a fixed rate of return on capital employed tends to encourage inflation of capital costs. The same thing is valid for recovery or variable costs in the two part tariff fixation mechanism.

5. Such high capital costs, fixed rate of return and two part tariff mechanism are tending to escalate the per unit generation costs also which may be any where between Rs. 2.50 and Rs. 5.00 per unit. The issue is that with such high costs of electricity, can the Indian Industries be globally competitive ?

6. The title of the Report covers the impact of the policy initiatives on the economy. This aspect has not been covered in the Report. The Committee may consider recommending undertaking of study of the impact of likely cost profiles of the ensuing power projects on the economy, particularly on the global competitiveness.

7. The progress of the renovation and modernisation programme which are again less capital intensive and with relatively lower gestation period, appears to be rather slow. Out of Rs. 1,174 crore sanctioned under the phase I programme Rs. 971 crore have been spent. In physical terms the increase in the Plant Load Factor has not been mentioned.

8. Phase II programme was started in 1990, but the financial and physical achievements have not been mentioned.

9. The Confederation of Indian Industries (CII) had pointed out that presently there is no adequate comprehensive policy guideline attracting private investors for renovation and modernisation project. The Committee may recommend that the Ministry lay more emphasis on this aspect.

10. Demand Management will result in saving of 15,000 MW capacity by 2006-07, but this has been considered insignificant compared to the required capacity addition of 1,42,000 MW. This is not a correct attitude. This capacity alone would cost over Rs. 60,000 crore and thus saving is to be seen in this perspective.