This concept may be extended to the large corporate users of railways also (say, the thermal power generating companies, the oil sector PSUs and the Food Corporation of India). For buying these bonds, these large clients of Railways may be given a discount to regular freight rates over the life of the bond.

CHAPTER-V : RECOMMENDATIONS:

GENERATION, TRANSMISSION AND DISTRIBUTION POWER SYSTEM

The operation of reliable Power System requires integrated operation of the three main components of Electrical Industry. These components could operate as distinct Profit Centres within an integrated utility or could be separate entities.

(a) Generating Stations – Thermal (Coal, Gas based), Hydro, Nucelar, others

(i) EHV Transmission Lines – Integrated at State/Regional/National Levels.

(ii) Distribution Systems – organized at State, Zones, Distribution Circle, Division level etc. based on area or consumers.

The output of generating units is stepped up to 220 or 400 KV and transmitted to the load centres at EHV sub-stations to feed Distribution Sub-stations (or dispersal points). Transmission network is composite A.C. and HVDC Transmission System in India. At EHV sub-stations the power is stepped down and carried to the load centers by sub-transmission and or distribution lines to reach the utilization voltage of the consumers. Distribution sub-stations are located al various villages / cities and load centres and power is stepped down up to 400 V (3ϕ) for and 220 V (1ϕ) for supply to the consumers.

Each component of the power system is important and requires investments to bring efficiency and optimality. Distribution system being the vital link

between utility and consumer, if not planned properly affects the consumer directly. The Generating Stations are owned by Central or State Government owned Utilities or IPPs and there are Captive Plant of Industries. The Distribution - Circle or Company must obtain power from these available generation sources to serve their consumers. In a multiple generation / IPPs scenario with separate tarrifs; the cost of electricity supply to a Distribution Circles would be different. Power System operation and tariff regions must be designed to be operated and managed in such a manner that

(i) Overall cost of generation is minised (i.e., cost of fuel and transportation is minimum)

(ii) The operating losses (technical) in system are minimised/optimised

(iii) Sunk cost or fixed costs of old and new plants are appropriately provided to be paid by consumers

(iv) All additional investments are optimised in the perspective of overall growth and development in short, medium and long term scenario. Short term of 1-2 years, Medium term 5 years and long term of 10-25 years need to be considered from Electricity industry angle.

(v)Investment should be made with due determination of priorities in Generation and Transmission

Investments in Distribution is made on the basis of allocation to the Distribution Circle based on assessment by the Circle. Incentives and Disincentives should be provided to the Distribution -Circle wise based on their achievements in terms of economy, and extra revenue collection with respect to previous period.

6. PROFIT CENTRE APPROACH TO REFORMS

Efforts to turn around SEBs from loss making to profit making entities have been going on since 1990-91. State Government, Central Government, SEBs multilateral banks and Financial Institutions have been putting heads together 10 find ways to achieve that goal. The solutions have eluded so far. There is a general feeling among all these institutions that the State Electricity Boards (SEBs) in the current operational systems are financially unsustainable. The losses have mounted to a

very high level and it is universally recognised that there is immediate need for fundamental changes in the organisation of electricity business.

Restructuring of SEBs by separating Generation, Transmission and Distribution Corporatisation of separated entities carved out from SEBs started in Orissa in April, 1986 at the instance of the World Bank 1996. It was expected that power sector reforms would be sustainable if Privatisation is brought in with following major steps of reforms:

i) Setting up and operationalising State Electricity Regulatory Commission

ii) Unbundle and Corporatise SEBs in Generation (Thermal), Generation (Hydro), transmission and a number of Distribution Companies.

iii) Privatise Distribution Companies and state generation companies.

This approach has been widely applied in a number of States to reform and restructure SEBs since 1995-96. CERC has been established and is functional since 1998-99. SERC has been established in majority of the States. Unbundling of SEBs has already been implemented in Orissa, Andhra Pradesh, Haryana, Rajasthan, Kamataka, Uttar Pradesh and partly in Gujarat and West Bengal. It is argued that financial turn around of power sector would take some time as it is a slow process. The speed at which losses are increasing in the Power Sector is alarming. This does not allow much time for accepting slow process. The country is now craving for prescription of Distribution system reforms which could bring about speedy financial turn around of SEBs in the existing set up.

Establishment of Distribution circle wise Cost Profit Centres in each SPUs is considered to be a major step in power sector problem reforms in India. Profit Centre approach in Distribution circles provides the most effective and sustainable route to Distribution system reforms and checking the power theft which is estimated between Rs. 20,000 crores and 30,000 crores per annum. This approach is based on organisational effectiveness and Management improvement as opposed to legal and political solutions in other modes of reforms.

Creation of Profit centres as a responsibility centre within SEBs and State Utilities can help restore financial viability of the power sector as a whole. This approach would re-establish accountability within the organisation. It would help delegate commensurate authority to line managers and would establish a set-up for effective discharge of their responsibility in view of the Distribution circlewise Electricity Accounting. This will help measure performance, reward the performance and give a sense of achievement to line managers and staff. The reduction in losses, increase in collection of revenues and control in expenses are feasible if authority as well as responsibility could be effectively delegated at Distribution circle level.

DISTRIBUTION CIRCLE-WISE REFORMS

This approach which involves establishment of Distribution circlewise cost & profit centre and effective 'Electricity Accounting'; entails change in organisational culture and employees mind set along with technical interventions to facilitate greater authority and accountability. This will also necessitate change in mindset at Slate levels; to move away from centralized budgeting and financial controls. The creative creative potential of professional and experts within SEBs would be effectively exploited with approach to bring higher efficiency and economy in management.

The achievable benefits are enormous. Profit centre approach as an efficient management oriented prescription can bring results in a short period. Failure to take speedy measures to change the organisation cultures in SPUs through Profit centres and commercialization could eventually result in the financial collapse of the Power Sector in India.

ELEMENTS OF DISTRIBUTION PROFIT CENTRE (DPC)

"Distribution Profit Centre" is similar to an internal responsibility centre in any organisation which works as an independent unit with measurable performance. The SPUs are owned by the State Governments and hence the State Governments used the subsidised electricity pricing as a tool to win over their voters. On the other hand SPUs did not operate the distribution circles: transmission grid or generating stations as cost-profit centre. The absence of a profit centre approach which is normally applied by all multinational/large corporates, resulted in ignorance towards the solutions which could be found to improve upon the performance. The technical and

distribution losses in agriculture are reported to be under stated in many SPUs by cancealing the commercial losses due to theft of electricity by inflated figure for the Agricultural consumption which is not metered (and supplied at very subsidised rates). The metering of entire electrical energy received in a distribution circle therefore becomes necessary to organize if as Distribution Profit Centre (DPC).

Electricity sector may have been managed by SPUs in a fairly satisfactory manner as far as technical aspects of the industry is concerned. What has been ignored in the past is that energy available and supplied and cash collections from consumers were not accounted for and regularly compared, to ensure that there is always a net profit in operations.

MANAGEMENT SYSTEMS

DISTRIBUTION PROFIT CENTRE - THE MANAGEMENT PHILOSOPHY

Basically the role of the Distribution - Circle is to convert total electrical energy received by it into real money. The relationship between the electrical energy received, the transfer price of electricity received; the revenue realized from consumers; and the revenue which should have been received from the consumers, availability of **quality supply** and **quick service** to the consumer should become the basis of performance indicator of the Distribution Circle. It should be the job of the SE Incharge of the Circle functioning as the CEO of determine performance indicators of the employees working for him within the policy guidelines emerging from the SPUs HQ. The CEO of Distribution Circle could be guided by the Advisory Group or the team of CE/'CEO (SE)/ and EEs who should have adequate freedom to 0utilise limited funds provided to the Distribution Circle from the SEB HQ. The multi-layer control of funds provided in Govt. System now should be converted in responsibility related authority to deploy funds.

The responsibilities should be closely linked to authority at all level starling from Members/Directors of SPUs, CES and CEOs of Distribution Circles in terms of

(a) Funds provided

(b) Organisation. Structure

(c) Manpower Selection/appointment

(d) Promotions and incentives.

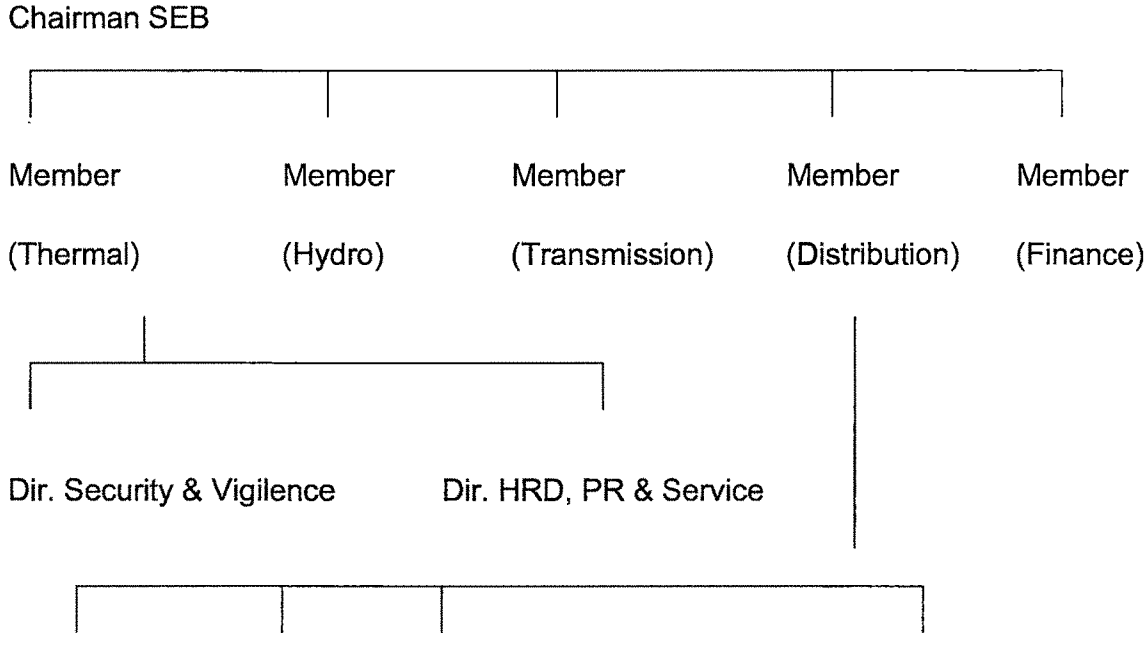
The creation of Distribution Profit Centre (DPC) is the key to Accountability. However, mere creation of a DPC would bring no results unless the system of arranging funds and authority for expenditures are synchronised to give maximum delegation to CEO of DPC. Thus there is need to reduce the layers in fund allocation, monitoring; and budget control. Line organisations to achieve results should be clearly defined and faithfully observed in operations of the DPC.

10. FUNCTIONAL ORGANISATION OF DISTRIBUTION CENTRE

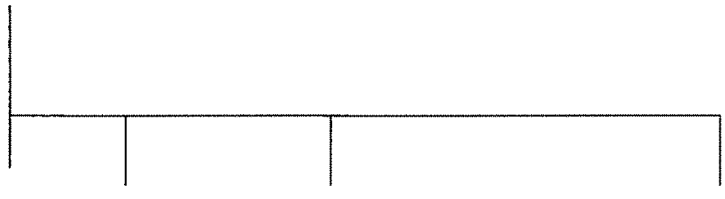
The Distribution Circle, which is selected as profit centre in the State electricity Boards (SEBs) should function as a single self contained unit,

of which Superitendent Engineer (SE) should be the head having all technical, financial and administrative powers and responsible for availability of supply, improving quality of supply, losses reduction and realization of total revenue and convert it into profit making unit.

ORGANISATIONAL STRUCTURE



AE I AE II AE III AE (Billing, accounting and Coordination and planning)



JE I JE II JE III JE (Reading billing & coordination)

Constitution of Advisory/Coordination Committee

Board - Chairman/Members of Board

Appex. Adivisory Committee - Member (D) / All Ces (D)

Zonal Advisory Committee - Member (D)/CE (D) of Zone/Ses
one for each zone (headed by Chief Engineer)

Circle Advisory Committee - CE (D)/S.E. (CEO)/Ees
for each circle

Division Level Advisory Committee - S.E. (CEO)/EE/Aes
one for each EE

Inclusion of next higher Officer shall have following purpose.

(i) Fixing targets for execution and implementation.

(ii) Appraisal to Senior Management.

(iii) Sensing the problem and discuss advise workable solutions.

(iv) Spot decisions to accelerate system improvement and effective monitoring.

Superintending Engineer (SE), functioning as the CEO of DPC would be assisted by Executive Engineer. Assistant Engineers, Jr. Engineers and the Supporting Staff. The CEO would be guided by on Advisory Group in matter of policy and Expenditure, the Advisory Group would consist of Chief Engineer (zone); CEO and his Executive Engineer, Assistant Engineer, Jr. Engineer and other supporting staff would be given clear cut roles and responsibilities by the CEO/Advisory Committee. The parameters of performance and responsibilities should be carefully designed at even- level. Care shall be taken to see that adequate knowledge, experience and core - competence is available to the DPC. Executive Engineer level office along with supporting staff would normally discharge the following responsibilities to support CEO.

(i.) Electricity accounting of the energy fed into DPC suitably divided by supply feeders transformers and type of consumers.

(ii) Utilisation of stores in economical manner from Central location or from a separate location for DPC or the division.

(iii) Provide inputs for planning and growth of Distribution System.

(iv) To design proper incentives to improve culture among the work force in the DPC.

(v) Keep track of the expertise available, performance etc. and assist CBO in providing incentives based on performance.

(vi) Arrange for facilities 10 deal with work exigencies.

(vii) Security and legal matters to advice CKO on matters of theft of electricity: disconnection's etc.

(viii) Legal/Security Officers/Accounts Officers/Labour welfare Officers would directly report to EE/CEO and would be fully responsible to them.

(ix) If results are to be achieved in the shortest possible time. Distribution System Reform must focus on the following objectives to operate Distribution Circle Profit (DPC).

(a) CEO of Distribution Circle to be allowed to operate without any interference in his decisions taken consciously.

(b) Make this CEO, fully responsible for the functioning of DPC. He will have an Advisory group to guide him which collectively is more competent then the CEO (i.e. CE/SE/EES etc.). This shall give two ways effect, massage to down below for actions and help from top to assist performance.

(c) Limit of funds for expenditure in DPC in a financial year be decided for the C'HO on realistic bases and he should have the freedom to utilize it. The CEO would be accountable for funds used through yearly targets of his performance. CEO and team should be given incentives based on the result. The expenditure shall be absolutely need based for short term measure and day to day functioning of the system as absolutely required.

(d) The new investment in the distribution circle should be made at the discretion of CEO and he should have free hand to choose the liming and the type of investment. Subject to appraisal and approval of projects by competent authority. Who will plan according to the load requirement and need to create flexibility in the system to contain immediate load growth. The funds to be invested should be placed at his disposal.

(e) Centralized systems and support services availability to the CEO should be clearly known. The performance measurement of each distribution circle should he adequately designed. The performance indicators would be used to provide incentive, based on improvement in performance and economical utilization of funds.

The foregoing philosophy of DPS operation in all the Distribution Circles of SEBs could be applied throughout the states simultaneously.

MANAGEMENT TOOLS FOR DPC

During the conversion of each Distribution circle into DPC; the following aspects should be given high priority to improve the Management Systems. The functional efficiency and performance of DPC could be improved by focussing on these parameters.

a) CEO/Managers must focus on following parameters.

- Technology application.
- Motivation of people
- Clarity in objectives through communication.
- Persisting on objectives set.
- Improvement in Systems & Procedures.

b) SUPS should agree through Apex Advisory Committee (AC) and AC with each Distribution Circle DPC Key performance targets for each Month and Quarter and these shall be internal to the Organisation.

c) Funds for O&M shall be allocated to each DPC and utilised from their own revenue collection within allocations.

d) Funds for fresh Investments shall be organised from funding sources.

e) Guidelines for DPC operation and Management shall be prepared by Apex AC and followed by DPCs.

f) To ensure that decision and fundamental charges are not resisted by employees proper counselling and education is necessary and win-win situation should be designed through incentives.

g) Unified command - There should be a unified command for the decision of the Board/Utility, and for coordination decision in the DPCs through the ChU Management should be independent for deployment of personnal and specialist, after having decided on rates, responsibilities, delegation of authority and incentives. Trust should be vested in the employees to maximise out put.

h) Outsourcing : In areas lacking in core competence lack of expertise, or technologies, DPCs should not hesitate in outsourcing the manpower of technology DPC should concentrated approach in planning and execution to maximise efficiency of asset utilisation from Generation till Distribution. This will minimise unproductive investments.

ELECTRICITY ACCOUNTING SYSTEMS.

There are numerous causes of Sub-Transmission/Distribution losses occuring in the T&D system and the Distribution Circle. These are contributing to the deteriorates financial health of SEBs. Unless the entire electricity system is gradually and systematically metered to account for each KWH of electricity fed into the system it would not be feasible to operate Distribution Profit Centre (DPC) effectively.

To start with the Electricity Accounting system can work even before 100 metering at the L.T. consumer level to pin point the possible areas, of leakage of electrical energy and theft. It can also draw attention to the excessive technical losses in certain section of the Distribution Circle net work for improvement. Process of Installation of meters and reducing loss in the system by curbing theft and improving the level of maintenance of system can work simultaneously, without loss of time i.e. from day one.

There is need for accountability in the DPC act every level. Electricity accounting would require proper metering and accounting of electricity in DPC in the following manner.

(i) Total energy received should be measured at the level of distribution circle supply sub- stations (Feeding from GRID).

(ii) The energy should be measured at the receiving stations.

(iii) All out going 11 KV feeders should be provided with meters (o record flow of power.

(iv) All transformers in the circle from 100 KVA & above capacity should be provided with meters to account for total flow of electricity. The coding of Transformers should he linked with feeder code.

(v) According to area being maintained by individual J.E /A.E. /E.E. total intake of supply should be computed and recorded with respect to each of above individually and collectively.

(vi) Sub-station-wise flow of energy as received and billed at consumer end should be recorded and computed.

(vii) Experts shall evaluate the estimated level of Technical Distribution losses in the DPC area based on recorded parameters of power supply and compare it with metered actual losses.

(viii) Evaluation of estimated technical losses, electricity received and billed to different category of consumers would be worked out in a manner that each Junior Engineer could monitor and conduct electricity accounting in his area.

(ix) A.E. should make electricity accounting for his area with Jr. Engineers and would supervise the same for each Jr. Eng. for his area.

(x) Electricity Accounting would move upwards form Jr. Engineers to AE to EE and to DPC level. The CEO would regularly conduct accounting for DPC and would use it for the purposes of incentives (not for punishment) and improvements.

(xi) A consolidated statement for the DPC would be organised by CEO of each DPC and strategy for improvements would be devised by Advisory Groups for Zonal Areas/SPU Level.

(xii) To motivate the staff and encourage DPC employees for better performance. DPC performance linked incentive be given in cash to all the employees of the unit of which JE/AE/EE are the heads. For total performance C.E.O should also be entitled for incentive.

RECORDED SALE OF ENERGY

The boundary of area maintained by individual J.E. is specified and the LT lines feeding that area are also specified for which J.E. is responsible to maintain in good health. Individual consumer consumes the energy and the same is recorded by the meter installed at his premises. The meter reading is taken at a decided time on decided date and the quantum of energy consumed added together amounts to recorded sale of energy through that line.

Since maximum revenue is realized from the industrial consumers as such dedicated industrial feeders should be designed or the industrial load should be segregated on HT feeders and effort should be made to see that industrial feeders are kept well maintained and with minimum interruption. Regular checking of meters and consumption be monitored regularly so that there is no commercial losses, and are low technical losses on such feeders which are well planned and maintained. This will help in more revenue realization and consumer satisfaction attained by availability of interruption free qualitative supply.

Exact calculation of recorded sale of energy in the entire area is not so simple, it is time consuming and not feasible monthly. But the amount of energy billed and revenue collected give monthly tentative figure. However if the figures area added for the whole one year the tentative figure calculated monthly shall lead to near factual since the time gap in recording readings of individual consumer can not be more than 24 hours. Since the regular reading days are fixed for individual area of consumer, and when computed on yearly bases the approximation shall be 1/365 or 0.27 thus can be taken as near accurate.

However regular exercise is to be done in the area of each JE once in each month for exact computation of losses by selecting one transformer or two of 100/400/630 KVA capacity depending upon the no. of consumer, following procedure can be adopted.

- Stop supply at one time on any day.
- Take reading of all meters in that selected area.

- Switch on supply.

- Repeat the same exercise either after one month (30 days) preferably on the regular meter reading day.

- Compute the figures, total energy recorded by the transformer meter. Total energy recorded by the all the consumer meters.

- Difference shall give the losses.

- This exercise shall also help in detecting the defective meters (stop / burnt/ seal breakage etc.) Replace the meters and thus the loss can be controlled.

The above be repeated for another transformers thus covering nearly entire area of S.E. in one year. If this exercise is truthfully carried out the results shall be encouraging and shall boost the financial health of the circle if remedial measures are truthfully taken.

22. ESTIMATES OF TECHNICAL LOSSES

As described above the difference of reading of the meters from grid sub-station on 11 K.V feeder down up to individual transformer is the loss of energy which shall be termed as technical loss on The 11 KV circuit. Since the meters are installed on both side of the transformers i.e. in coming and out-going the difference of reading of these meters is the transformation losses contributing to 11 KV circuit. The losses in LT lines are also calculated on the same pattern. All these added together are the total distribution technical losses.

GENERAL CONCLUSIONS REGARDING ORGANIZATION & STRUCTURE

1. SPUs should run on professional and commercial basis.
2. Regular energy audit and accountability up to the level of JE and below to judge then-performance.
3. Performance based incentives to be given.
4. Out sourcing various activities, as may be required.
5. Consolidated planning from 220 KV to 0.4 KV level so that the system is ready for simultaneous use.
6. Coding individual consumer, houses, feeders and transformer with G1S mapping.
7. Sub-division should be made as profit centre units.
8. Proper accountability of expenditure on O&M employees cost subsidy etc. should reflect in the balance sheet maintained at the sub-divisional level.
9. Reduce time delay from meter reading to issue of bills and date of payment.
10. Separate accounting of outstanding dues on Govt. and non-Govt. consumers.
11. Simplifying the procedure for giving new connections and sanction of temporary connection for a period of upto 2 years against three months as on now.
12. 100% metering the consumer by installing electronic meters without enhancing the meter rent (amount invested can be recovered with better accuracy where more energy recording shall be possible).
13. Introduction of tariff on KVA basis.
4. Use of non-conventional source of electricity in remote areas /hilly areas.
15. Faming of revenue by way of printed advertisement on the electricity bills.
16. APDP scheme should be based on achievement and performance.
17. Feederwise recovery and input record should be maintained.
18. Proper training to the staff at various levels on regular basis.

19. Increase internal resources and expenditure should not be subsidized by tariff-hike.

20. In house competency should be recognized, utilized and also promoted.

21. Memory of the distribution system should not be proprietary of any individual and proper information should be available for future references through updated record.

22. Manual should be re-written and updated, also geographical mapping should be done and updated.

23. Industrial feeders earning maximum revenue should be kept in healthy condition to ensure continuity of supply. These should be regularly maintained during off days of the week

24. By proper monitoring the load system should be kept updated and arrangement sliould be made for speedy attending break downs and public complaints.

25. Man power is the driving force and the only effective instrument to achieve the desired result at accelerated speed, As such managerial talent has to be used to keep this force (manpower) healthy and efficient. The promoting parameters could be:

    (i) Recognition of efforts by showing concern.

    (ii) Bring out talent and further develop.

    (iii) Value their useful suggestions.

    (iv) Reward the achievements.

    (v) Never allow them to feel neglected.

    (vi) Provide due facilities well in time.

    (vii) Keep proper check and balance.

    (viii) Infuse sense of belongingness.

(ix) Teach economizing, accuracy, punctuality and sincerity, by demonstration. Self-disciplined officer is best teacher and motivator.

(x) Order and instructions should be simple and clear, reliable and understandable.

(xi) Goal and targets should be well defined and made known.

Suggestions regarding raising of resource for Power Sector

Imposition of cess on power generation: The funding of a large power sector plan requires considerable budgetary support from the Central Government. It is proposed that an independent funding mechanism may be created for this purpose. The recent mechanism of funding National Highways Development Programme through a cess has been quite successful. It is felt that a similar mechanism should be considered for the power sector. It is suggested that a small cess @ 5 paisa should be imposed to generate the additional sources of the order of about Rs.30, 000 crores over next to 10 years, for the power sector. As total central Govt. budgetary support is projected as Rs.86, 000 crores, this cess will help to ensure that the committed budgetary support by Central Govt. to CPUs and SPUs will actually materialise.

Bridging the equity: To bridge equity gap proposal includes change in depreciation norms, implementation of MSA Committee Report, Development Surcharge, Dividend plough back, IPO issues, India Power Fund (Section 5.3) and allowing SPU 20% equity investment instead of 30% provided undertakes reforms.

Setting up of the India Power Fund (IPE): To meet the problem of non-availability of necessary equity capital while also affects the capacity of raising debts for new power projects. The concept of India Power Fund has been proposed by PFC to meet at least 10% requirement of investment in the power sector in the next 10 years (the size can go up to Rs.1, 00,000 crores by phased increases in the fund) through its three windows viz. Power Equity Fund (PEF), Domestic Debt Fund (DDF) and Foreign Debt Funds (FDF). This needs to be supported after a detailed examination in all its implication. The IPE may need several tax exemptions as well as seed money, which are listed in the relevant section of this report.

Purchase through ICB (International Competitive Bidding) with supplier's credit: Considering the low interest rate scenario for external credits and also low equipment price overseas for equipment, the power utilities may keep in view the possibility of purchasing equipment through offers under international competitive bidding. The utilities may consult financial institutions in this regard before finalizing their strategy for a particular package.

Floating rate Borrowing: So far the Indian issuers who were not exposed to foreign borrowing were not used to borrow loans which are linked to floating arte of interest which are fixed periodically. Although in India, some banks have started lending bases on their PLR, but the same has not become a generally accepted interest benchmark like LIBOR (London Inter-Bank Offered Rate) which is globally used for pricing of floating rate loans. With the introduction of MIBOR (Mumbai Inter – Bank Offered Rate) some banks have started pricing their debts linked to MIBOR plus a margin earmarked thereon. It is felt that the Government could permit floating rate borrowing for power developers and suitable relaxation in this regard

may be made approving project cost by CEA or while fixing tariff during operation period and Electricity Regularity Commission.

Funding by All India Financial Institutions (AIFI)/Banks: The AIFIs/Banks are already sanctioning loans to IPPs generation. But, It has been experienced that after sanction of the loan, most of the IPPs are not able to draw the loan. There has been security-related problem. It is suggested that AIFIs/Banks should consider to finance state sector linked the pace of reform taking place. The AIFIs should also consider to financing distribution projects of private sector as well as state sector. The sanctions that are not expected to materialise should be scrapped.

ADD/GDR: Central PSUs of power sector should raise equity both in domestic and external market. For the external market, they can consider ADR/GDR. The central PSUs like PFC and NTPC should start the preparatory work for raising the funds through ADR/GDR. These institutions should keep ready to penetrate the external market keeping in view the scenario of liquidity position in the domestic market.

Linking lending with reforms: PFC and REC being a dedicated financial institution for the power sector should link the financing with the reform milestones of the borrowers. And ensure that financial viability of the utilities is brought to commercial level with the implementation of reform measures including rationalization of tariffs for various types of consumers.

Selling of existing plants/other assets: One alternative to raise immediate funds for further investments in Power Sector are to sell some existing assets of SPUs, after corporatising the same (may be each plant separately). This may enhance participation from private investors/lenders as the construction risk is already over and the project is already generating revenue. However, the issues relating to setting of tariff on the repurchase price of such plants needs to be addressed through proper legislation. Some SPUs may also be able to sell the real estate in order to raise resource. But, reasonable return will be expected only after putting the proper payment security mechanism in place.

Innovative financing: Innovative financing of power sector projects should be considered. Recent example of funding of funding of Raylseema Project in Andhra where the foreign party is expected to build the entire generation plant at their cost and transfer the same to the utility here when the entire cost will be treated as a loan, it can be considered for the projects.

Advisory for hedging services: The large quantum of resource mobilization as envisaged to be taken up by central and State Power Utilities may also mean diversification of resource base from domestic and international markets. The borrowers will have to equip themselves for evaluating risks involved (like exchange rate, interest rate, maturity mis-match, refinancing risk etc.) and will have to develop expertise to hedge against these risks. In this direction, corporate like PEC, NTPC who have already exposure to foreign currency loan and have expertise against hedging risk can take lead in developing advisory services for hedging against risks to which the new borrowers may take advantage of.

Short Term/Medium Term Loans/Automatic re-financing/flexibility: There is a significant changes in the perception of banks especially foreign banks about exposure on clients beyond a period of 5 years. In this background any client trying to rise long – term credit either gets very poor response or if the response is there, the underlying price is higher then the short-term or medium-term loan price. It is felt that it may not be necessary to tie-up entire funding for long-term, but the project developers may design a mix of short, medium or long-term loan products. This will facilitate mobilization of higher resources and at the same time the overall

cost of funds may be lower. It may be necessary to give suitable flexibility in this the overall cost of funds may be lower. It may be necessary to give suitable flexibility in this regard with automatic adjustment for refinancing of short-term/medium – term loans depending upon the market conditions at the time such re-financing. This aspect also is to taken into account by the regulators while fixing the tariffs.

Tax exemptions for power projects:-

Presently, the project developers who want to avail tax benefits available under Section 10 (23G) have to apply to CBDT for exemption in this regard. The exemption is being granted for a very short period normally 2 to 3 years. This is creation uncertainty in the minds of the lenders and project developers. It is recommended that the powers in this regard may be delegated to the Ministry of Power and an arrangement may be made that such approval given for longer period will not require reconfirmation unless the project stops generation of power for certain period or any other such condition the Government may like to impose, in consultation with MOP.

Exemption Under Section – 10 (15) (iv) (e) of I.T. Act, 11961 from with holding tax for ECBs for power sector: - the proposed average size of ECBs for power sector (about USD 2 billion) every year needs the tax exemption on debt service to be restored, so that the external borrowing remains cost effective as compared to domestic debts.

Investment in Power Sector to be priority sector lending: - Institutional finance is still the largest source for funding of power projects. The bank credit can be sizeably attracted if subscription to bonds/other debts or power companies is treated as priority sector lending.

Introduction of Long term debt instruments for hydro power investment: - The gestation period of hydro projects needs borrowing through long term debt instruments, preferably for 20-25 years. Such long-term instruments/bonds will need flexibility of coupon fixing periodically (say every 5 years) and some support from Govt./other agencies as guarantee, at least for principal repayment, so that the interest of the investors can be enhanced. Alternatively, such instruments/bonds can have floating interest rates linked to domestic benchmarks like G – sec rates and can be structured on the lines of Floating Rate bonds issued in the International market. Such long –term debt on floating rate basis with reset clause to be recognized by authorities at the time of approval of cost estimates, as well as for tariff fixation.

Differential coupon bonds:- Certain bonds carrying either stepped up interest rates or stepped down interest rates every year depending upon the projects can be introduced. Such bonds may help in attracting more investors as risk may be rewarded with varying interest coupon. Such interest payments will need to be permitted for tariff fixation purposes.

Promotion of joint sector projects: - the possibilities of promotion joint venture projects with majority holding by CPUs/SPUs may reduce the burden on Central/State sector investment (as 100% funding will not have to be arranged by them) and also facilitate participation of private capital through such projects.

Sectoral exposure limit of Financial Institutions/Banks: - The limit of 15% on sectoral exposure of AIFI's in case of power sector investment needs to be increased to say 25% Exposure limits of 10% in case of banks also need to be increased for power sector to same limit as for AIFIs. As some AIFIs are getting converted with universal banks, the exposure limit for the two should be kept as same level.

Sale of inter-state power by SPVs: - Projects which are being started as SPV or a separate company either private or joint venture can become bankable if a permission is granted by the state Government while approving the project that in case the utility does not pay the power dues in time, the power generator will have a right to sell power through inter-state transmission lines to any buyer outside the states in which it is located.

Hedging costs to be eligible for tax benefits and also admitted as tariff components: - The hedging cost should be given tax exemption as if the same is a debt service obligation. Such costs may be expressly permitted for tariff calculation purposes. The projects which look for ECB route have to be sure of the above to take (a fully informed financing) decision and it may expedite choice of funding sources.

Guarantee fees on GoI guarantee: - It is proposed that Guarantee fee may be reduced from 1.2% to smaller say 0.25% especially in case of multilateral credits channelised either through GoI or directly to CPUs/SPUs though govt., as such credits need Government guarantee essentially due to agreement between Government and multilateral agencies even if

Tax Paid Bonds; - One of the alternatives before the IPF is to issue tax paid bonds on which the issuer pays tax (on the lines of earlier dividend tax) and the receipt in the hands of the investor will be tax exempted. Suitable enabling provision in the Income Tax Act, through a new section will need to be made. The tax rate of around 15-20% levied on the coupon of the bonds will ensure lot of investment from high tax bracket investors in the India Power Fund and at the same time bring about high degree of compliance in tax collection which ordinarily may not be there particularly in case of retail investors:

Special Power Bonds to unearth Black money: The huge requirement of funds for Indian Power Sector needs a special scheme to launch Special Power Bonds (Vidyut Vikas Patra) to attract investment of funds from Indian and overseas in these bonds, without necessarily disclosing the source of investment. The overseas fund will not be repatriated back from India. The tenure of bonds can be kept long, say, 15-20 years. These can be floated by the government or by Indian power Fund.

India Power Fund

The IPF is proposed to be set up as a separate entity managed by PFC, with initial contri9bution by sponsor; PFC, GoI, Bank etc. While the concept/structure of IPF is to be examined in detail, it may require some special concessions, provision as follows:

I. Government contribution to Power Equity Fund (PEF) – To begin with, in the FY 2002 – 03, some allocation from GGI to the PEF may be needed. It is proposed to be met from the cess on power generation, mentioned above.

II. Guarantee for Debts – Considering the volume of debts of about Rs.7000-10000 crores expected to be raised every year by the India Power Fund from the domestic and external sources, some credit enhancement from the Government would be required. It is proposed that to attract large investors and also the social security funds like Pension, PF, Gratuity and Insurance, Government may provide an umbrella guarantee to IPF about Rs.5000 crores of the worth of debts to be raised by the IPF. This will act as a pool guarantee for debts to be mobilized by the IPF. This guarantee fund can be supplemented by the Guarantee of FIs and Banks in future whenever the size of operation of the fund increases.

III. The PFs, Insurance and Pension funds may be permitted to invest minimum 5% of their future annual funds in the India Power Fund. Such investment by them will be a senior debt of the India Power Fund.

IV. Investment BY Banks to be treated as Priority Lending: As the IPF would lend only for the power sector, investment by Banks in the India Power Fund may be treated as priority sector lending (as proposed earlier) for the purpose of calculation of priority sector lending portfolio of Banks Advances.

Income Tax Exemptions for IPF:

a. Section – 10(15)(iv)(e) – Exemption of interest on ECBs: the IPE may have a separate window for Foreign Debt Funds (FDF) for sizeable resource raising from the International Lenders. An exemption on interest paid by the IPF to overseas lenders has to be notified as eligible for exemption from applicability of Indian Income Tax under Section – 10(15) (iv).

b. Section 10 (23 G): The IPF will also borrow from domestic market and lend to infrastructure projects like power associated T&D systems etc. the income from investment in the IPF should be considered as eligible for exemption as available under Section 10 (23 G) of Income Tax Act.

c. Investment Eligible for Exemption under Section-88: The Section –88 may be amended to make investment in India Power Fund also an eligible investment for availing exemption under Section –88 for infrastructure within the existing ceiling of Rs. 100,000.

d. Section 54 EC: an investment in the IPE Equity or Debt should be considered as an eligible investment for capital gain purposes. Necessary amendment in section 54 (E) will be necessary in the Income Tax Act.

e. Section 195 (1): The India Power Fund may notified to receive sums from Indian Institutions/ Companies/ Investors without deduction of any tax at source.

f. Tax Free bonds: An enabling provision may be made in the Income Tax Act Under Section 10(15) (iv) h to permit India Power Fund to issue Tax Free Bonds. The raising of resources from domestic market will be of large volume to meet the annual fund requirement of IPF. However, the amount to be raised each year through Tax Free Bonds will be determined by the Government.

g. Exemption from dividend tax and capital gain tax to the IPF: As the IPF will be making its investment in a sector considered risky at present, it will be appropriate to notify that any dividend to be paid by the IPF will not be subject to the Dividend tax in the hands of recipient. Similarly, when the IPF sells its stake in any power project for re-investing its sale proceeds into a new project, any capital appreciation has to be notified as exempt from being treated as capital gain or business profits as the case may be. This is needed to facilitate a fast build up of adequate fund in the India Power Fund to meet future requirement of the Power Sector.

h. Incentive to corporates for investment in IPF; Corporates may be given some exemption u/s 36 of the income Tax Act (somewhat similar to Investment Allowance permitted earlier) so that they get some benefits of blocking their money in IPF for long term. It is suggested that an allowance of 20% of the amount invested by the corporate assesses may be allowed as deduction while calculating profit if the assessee have deposited any amount in IPF under any of its scheme. The scheme may be introduced for 10 year

VI Exemption from Payment of Stamp Duty; IPF may be exempted from payment stamp duty on the Vidyut Vikas Patra Power bonds and debentures or any other debt or equity instrument of IPF, or any securitisation of debts done by IPF, to minimize the cost of funds of IPF.

Other recommendations:

Central PSUs to be progressively restructured and fred from government control. New projects to be in joint sector, as far as possible. Existing standalone generating stations to be owned aM operated by separate companies. Gradual competitive bidding for power projects.

States to consider levy of a power development cess of 10 paise/KWh on total quantity of electricity consumed, for functioning hydro development, electricity conservation, R&D aM other activities in power sector.

There can be no disagreement that the key recommendations of the Report are in tune with the policy of economic liberalisation and the objective of commercilisation. The Report poides a badly needed policy platform for the Centre to activate various measures towards sector reform. In light of the assessed investment needs and the requirements for providing a power infrastructure that would efficiently support a globally competitive economy, there is justification for a more radical overhaul of the existing regulatory arrangements than what is recommended by the NDC Committee, The recommendations regarding Tariff Boards would leave open various other aspects that are ill-served by cofing arrangements, for instance, regulation of quality of service to consumer and prevention of exercise of monopoly in NW like transmission.

Some of the recommendations will need to be developed further, such as the policy regarding restructuring SEBS, The onganisational and financial outlays needed to implement the NDC Committee recommendations remain to be quantified. Here again, several issues will require to be developed further: the proposed power development cess being an obvious instance. Channelling of the funds that can be generated by this means (approximately Rs 3 billion) would call for central intervention, especially for R&D and hydro power development (the latter potential is concentrated in states that would, pro rata, account for a small share of the cess income).

Even as the Report of NDC Committee is awaiting consideration by the National Development Council, the pressure of developments seems to be forcing some states to opt for more radical solutions than what the Committee has envisaged.

Several states have initiated measures towards power sector reform. Orissa, Utttar Pradesh, Haryana, Rajasthan and Bihar are getting World Bank assistance for the purpose. Orissa has progressed farthest in this respect (see box). The governments of UP and Haryana are currently examining the reports of consultants engaged through the World Bank. Bihar has sought World Bank assistance for restructuring studies and a proposal in this regard is under the consideration of the state government. The Andhra Pradesh government had appointed a committee of experts whose report is now with the state administration. The report recommends far-reaching changes that cover all areas of power sector reform, (see box), Meghalaya is contemplating wholesale privatisation of its SEB, on the recommendations of an external consultant.

The organisational structure of the Indian power sector was characterised by a high degree of uniformity. State-level variations came about with the setting up of power generation companies on the one hand and changes in the capital structure of some SEBs on the other. Further significant variations could result from the state-level changes in organisational and institutional structures, namely: The degree of unbundling that may be decided upon by each reforming state; The extent of privatisation that may be acceptable politically whether some of the states, individually, decide to set up state-level regulatory institutions. The institutional medium chosen for administering agricultural subsidies.

Uniformity of approach has no special merits in a sector that is potentially so diverse. Preference for such uniformity should not be the cause for delays in initiatives towards sector reform. It is recommended that the Ministry of Power should specify a core reform programme that should form part of all state-level initiatives of power sector restructuring, The core programme should include minimum required tariff reform (discussed earlier) and separation from government control of the regulatory function.

In formulating a comprehensive policy therefore, the broad thrust at the Central level should be to encourage multiple entities and varying ownership forms. At the SEBS, the larger ones especially would do well unbundling as would facilitate divestiture of o large scale and promote competition.

States that have already partially cor generation have the advantage of an earlier s ture of ownership, if the decision to privatis would also have the option to promote prival by allowing the generating companies to co supply direct to distributors.

Other Areas for Policy Support: The period of mal the sector that is immediately ahead also provide tunity to initiate measures that would upgrade ciencies to standards achieved by the sector advanced countries.

Time of Day Pricing: Because of the high power, a well defined time-of-day pricing form tant component of demand side management tations and cost implications (time-of-day m vented significant progress in this area. A maj limitations on SEBs that prevent their function cial entities. It is expected that with the restr sector leading to clearer identification of the peaking power, the prices will be adjusted to the case of bulk consumers as also identifiable (commercial, agricultural and domestic).

Tapping Hydro Power potential: India has potential, its full exploitation calls for certain initiatives. A list of hydro projects compiled by Power (November 1994) identifies projects total of which projects adding upto 10,750 MW have CEA. These are now offered for private sector 40 per cent of the capacity listed is concentrate ern and eastern border states (Himachal Pradesh J&K Manipur, Mizoram and Sikkim) that lack the financial an technical resources as also current energy demand for exploitation. The states need to be helped to develop in coordination with other states in the region for the mutual benefit. Existing institutional arrangements are clear inadequate for this purpose.

There is a case here for setting up empower Regional Electricity Authorities (by decentralising some CEA's functions) with the specific timebound task of deve aping the hydro power potential and assisting the state concerned in this regard. The Authority could provide technical and coordination support on all related aspects like water sharing, royalties, etc.

Developing storage-type hydro power projects involve Feparatory costs that are substantially higher than for there Special funding arrangements need to be devised to mee tese costs; the suggestion of the NDC Committee to earmar Foceeds from a power development cess for this purpose as to be followed up.

An issue of equal importance is the wd to develop a number of 'pumped storip'schemes for catering to peaking demand. The list of projects referred to includes three such projects located in Maharashtra (1,000 W and West Bengal (900 MW). Urgent development of these and similar schemes is mendal to reduce the dependence on nonmnewable and imported energy sources for Mfing the peaking power demand.

While promoting private investment in kdro power, care should be taken that the aws revert to public ownership after a period sufficient for the private promoter to ever costs snd profits. This is to ensure that the natural resources remain in Coemment's control,

Enhancement to Support Private rent: The large number of proposals cutndy under various stages of consideration for kftg up independent power projects would imke the bulk sale of power to SEBS, which, as have exclusive responsibility for retail distribution ofelectricky to consumers in the whole or large parts of their states.

A major issue requiring solution for the private power proposals to come to fruition, is that of providing security to BPPs as regards SEB payments for bulk power purchases, The Government of India's limited counterscheme has afforded the desired level of security to in initial batch of proposals. But the extension of this facility as arrangement is neither feasible nor contemplated. The World Bank has also, recently developed a scheme egending guarantees in respect of carefully screened power This scheme would again involve a counter-guarantee between the Bank and the Government of India. A suggestion meriting detailed consideration is the setup of a power purchase guarantee company that can provide the foundation for a significant amount of development through external private financing with recourse to any form of sovereign guarantee. Clearly, it will not be possible for such a guarantee company to cover all the risks attendant on an externally funded Power project. One central question that reeds to be addressed is the definition of risk for which a guarantee company would be the most appropriate instrument, given the other types of risk coverage that exist. Apart from risk coverage in the initial years of projects, it would be feasible for such an agency to provide credit enhancement that would enable projects to extend normal commercial maturities by facilitating rolling over of loans. Yet a third area where power projects need financing assistance would be in respect of strategic investments upfront

(project development costs). This has particular relevance to pre-feasibility studies for multi-state schemes (especially hydel projects), which would involve large funds to be locked up for considerable periods.

Restructuring of Central PSUS. National Thermal Power Corporation, set up in I 975, had an asset base of Rs. 249 billion on March 31, 1995. This was financed to the extent of Rs. 143 billion by capital and reserves, and the rest through loans. 1994-95 turnover was Rs. 64.85 billion, and the installed capacity of its generating stations totalled 15,625 MW One unofficial estimate places the current market value of NTPC's assets at around Rs. 600 billion.

Also incorporated in 1975, National Hydro-electric Power Corporation had an asset base of Rs. 73 billion as of end-March, 1995, funded to the extent of Rs 33 billion through capital and reserves and the balance through loan funds. With an installed capacity of 1,538 MW (and projects totalling 2,610 MW in various stages of planning and execution), NHPC's revenues totalled Rs 4.8 billion in 1994-95.

On going changes in the sector-especially the expected large-scale entry of private generators-pose new opportunities for these PSUs which have acquired considerable expertise in plant construction and operation.

While the scheme of unloading Central shares in the market has not, so far, covered the units in power sector, it would be appropriate in their case to effect divestiture through sale of assets to strategic investors. Both NTPC and NHPC could seriously consider hiving off individual units to joint venture undertakings in partnership with competitively selected private sector strategic investors. It is important to do so without sacrificing the long-term potential of these two undertakings to emerge as global players.

At present, the capacity of plants owned by these PSUs is apportioned to the states of the respective regional formation, the dilution of central ownership, greater flexibility in his regard is called for. The undertakings and their subidiaries should be empowered to set up plants dedicated to ndividual states and enter into long-term PPAs accordingly.

The reported understanding entered into recently (April 1996) by NTPC with Indian Oil Corporation to set up power rejects in proximity to refineries is welcome, especially because this combination has the added potential to develop internationally competitive Indian power promoters.

Regional Formations: The Indian power system is operated as five independent regional grids, each with a Regional Electricity Board (REB), and an associated Regional Load Despatch Centre (RLDC) which oversees the operation of the grid. The REBs are voluntary associations of the SEBs and other participating agencies in each region. They have the responsibility to promote and manage the operation of interconnection among each region's constituent power systems. While the Chairman of each participating system functions, by rotation, as Chairman of the REB, the Member-Secretary and secretariat staff are administratively under CEA, but functionally report to the Chairman, REB.

While the state systems forming part of each regional grid are interconnected, the RLDC mainly functions to regulate the transfer of the states' share of power from central PSUs and to ensure that the technical requirements of grid operation (mainly frequency control and emergencies), not always wi6 success. In the context of persisting shortages, which become acute seasonally grid discipline is often the casualty.

In the first quarter of 1995-96, such an acute situatm arose in the Southern regional grid, resulting from the over. Drawal of NTPC power by Andhra Pradesh. Severe frequeng problems resulted and protests were voiced by Tamil Nadu ad Karnataka, the former even threatening to withdraw from 6t grid, Orissa also wanted to delink from the Eastern regod grid on grounds of low frequency resulting from excess outgow of power from the state to the grid.

In India, the concept of a National Grid is yet to be deaily spelt out. Currently, inter-grid links adequate for free transfer of power exist only between the Northern and Western regions.

Similar links between the West and South and been East and South are under implementation and one the North and East is being planned. All five regions are Vued to be fully interconnected by the year 2000.

Considering the country's size, the free flow of power been regions removed from each other cannot be envisaged a current levels of technology. While a fully interconnected National

Grid needs to be promoted for its undoubted benefits, de importance of improving the efficient and free functioning d each of the regional grids should not be lost sight of. The 'power pool' arrangements functioning in advanced systems abroad could provide the model (see box).

I bkmational trade in power: over the long term, there dnid be considerable scope for trade in power with countries-specifically Nepal, Bhutan and Bangia the first two as sources of import of badly needed hydro pner and the third as an export destination. Agreements have been siped recently with Nepal and Bhutan; implementation projects should be a matter of high priority. Power Proucers: While a broad national conseno has emerged on the policy of economic reform and liberalkadon, the same cannot be said about certain aspects of the * as applying to the power sector, especially the free access pated to foreign promoters. In order to enhance the political ability of the policy relating to power sector, it is imporior to encourage domestic private promoters in all three segamts of the power sector. A policy of enhancing the technical md organisational capabilities of Indian industry is recom&Med in this respect, joint venture arrangements with existig PSUs and private distributors as partners need to be encour*d for this purpose.

Construction capabilities: It is realistic to assume private investments in power projects will accelerate over the next few years reaching massive volumes in about and will remain at that level for at least another *We. This will make unprecedented demands on the industry. This would call for a series of policy on the one hand and exposure to project supervision of ndards. A special reason for preferential to incentives) to this area is the long-term twin advantages of reserves of qualified e competitiveness-for the country to player in the international field. Timely capabilities of the sector will bring severg them:

Foreign exchange outgo on construction conplants and projects;

Project costs through their timely completion;

Potential foreign exchange earnings by Indian firms jobs in other markets, rs often select established overseas conr to provide sufficient comfort to the ompletion of the project on schedule and and cost specifications, Indian construce to compete in this area only on the performance. There are several handicaps to ief among them being:

Infrastructure problems (roads, ports, power supply itself),

Tendering and contracting practices set by government agencies which were the main investors in infrastructure projects so far. Inadequate management input into the construction industry.

Cultural factors and the weight of tradition of time and cost overruns in large projects.

The very entry, in large numbers, of Indian and foreign private promoters into the power sector, will, over time, neutralise some of the present weaknesses. Following are some suggestions that could expedite the process:

PPAs should, as a general rule, specify firm project price; contractor should bear the risks of time and cost overruns;

Supervision of project management by specialised consultancy firms, as common in large international contracts, should be encouraged;

Construction sector should be given industry status (which it does not have at present), for purposes of obtaining credits and certain concessions available to other organised sectors; and PSUs like NTPC and NHPC should cash in on their standing and associate with Indian public/private sector construction companies to set up specialised construction firms that can compete internationally.

Much of the impetus for quality improvement has to come from within the construction industry itself. The industry will benefit through a better management of fundamentals, that is, far more meticulous planning and time, material and cost budgeting of projects than is the case at present and professionally conducted concurrent monitoring, evaluation and correction during project execution.

Summary of Recommendations:

The general direction of the policy of inducting private entry into the power sector and of needed price and sector reform have been announced at top levels of government. Several specific measures have also been elaborated: tariff notifications, counter-guarantees, accelerated project clearances, competitive promoter selection, privatised plant renovation scheme, liberalised provisions for captive generation, etc.

However, the long-term policy relative to core issues-more specifically, price reform, regulatory arrangements and future structure of SEBs-remain to be enunciated in adequate detail. Laying down of comprehensive policy details in these and other such areas is an imperative and urgent requirement if the needed investments are to actually flow into the sector.

Certain shortcomings in the policy laid down so far would also need to be rectified quickly. The Report of the NDC Committee on Power provides the basis for a detailed and comprehensive long-term policy for the sector, indeed, some of the recommendations of the Committee have already been overtaken by developments in some progressive (from the point of sector reform) states.

A detailed enunciation of policy that deals with core issues should also take into account several supplementary initiatives that would upgrade sector performance. Among the more important of these are:

Introduction of time-of-day pricing Policy for tapping large hydro potential

Restructuring of Central PSUs

Regional power pooling arrangements

Uprgrading construction capabilities within the power sector.

OTHER REFORMS & RECOMMENDATIONS

Recommendation:

Thorough reform of the present uneconomic consumer, pricing is a matter of immediate urgency for the power sector. Price reform has to be implemented at the state level by SEBS; the policy in this regard could be spelt out by the Centre.

The long-term policy should aim at:

Bringing down cross-subsidies within the sector from their present high levels and eventually phasing them out;

Recovery of actual cost of service to each consumer segment through pricing of that segment (supplemented by explicit subsidies paid out by the government if government decides that specified consumer groups should be subsidised over the long term); and Average price for each consumer segment to be fixed taking into account the long run marginal cost applicable to that segment. The long-term tariff policy should be implemented in a phased manner. It should be feasible to effect a 10 per cent increase in average rate per annum (exclusive of year-on-year inflation) to be capped when the target price level for each consumer segment is reached.

The upward adjustment in prices should be balanced by improvement in quality of supply and standards of consumer service, which should be effectively monitored by a regulatory body independent of the service provider.

The pricing should be transparent and competitive, and should not result in inefficiency of sector undertakings being passed on to the consumer.

Where government decides to continue subsidised supply to specified consumer groups, it should also take on the onus of providing the funds for the subsidy and should devise a mechanism for transferring the subsidy to the consumer. Unmetered supply should be eliminated at the earliest; in case practical difficulties prevent this in the case of rural or remote areas, a secondary distribution agency representative of the consumers (like the local administrative unit, Panchayat) should be identified to receive and pay for the supply metered at feeding point.

Key Issues of Sector Reform

Experience in other developing countries indicates that entrenched price subsidies can be eliminated only as part of broader sector reform. While price reform is a prerequisite for providing the required security to attract massive private investment, sector reform would be a prerequisite for price reform.

The two broad objectives of sector reform are:

To demarcate the policy-making role of government from the functions related to implementing the policy, like price-setting, regulating sector entities etc and transfer the latter set of functions to agencies outside the government, and to obtain efficiency gains by bringing in smaller entities, promoting competition, restraining monopolistic features, modernizing management practices etc.

The Three Components of Sector Reform:

The three identified components to sector reform are

Structural reform (unbundling),

Attracting private investment into other segments of power sector-particularly in distribution, and the setting up of autonomous regulatory arrangements.

The basic objectives can be best served if all three components are taken up.

The first component has the long-term aim of restructuring the industry, as far as possible, along competitive lines; I as far as possible' because parts of the industry are natural monopolies. Restructuring should, therefore, be effected in a way that reduces the monopolistic features.

Privatisation of distribution and (to the extent feasible) of transmission, is needed both to bring in the volumes of investment required for system expansion and to bring about qualitative improvements and managerial efficiencies.

The third component of regulatory reform would serve the aims of Protecting the consumers as well as players in the industry from the exercise of powers of natural monopoly.

Facilitating competition that would bring about efficiencies and in our context, enforcing internationally comparable efficiency standards that cannot be effectively enforced in the existing arrangements. Industry entities bringing in private investment would also need regulatory protection against shifts in policy and the risk of powers being exercised arbitrarily by governments.

Unbundling: Separation of the generation, transmission and distribution functions into independent activities is identified as a key requirement for promoting such competition as is feasible in a sector that has monopolistic features. Full competition would be feasible in the generation segment in the long term, when multiple distributing agencies can have the right to access the generation source of their choice. Limited forms of competition are possible in the distribution segment at present; in the long term, full competition seems to be an attainable goal (see box on UK plans for introducing full competition),

Technical limitations would preclude competition among service provides in the transmission segment. However, efficiency could be enhanced (and new investment sources accessed) by diluting the degree of state monopoly in ownership through public- private partnerships and by providing for effective regulation as regards pricing on the one hand, and unfettered access to all sector entities on the other.

The entry of private generation on the scale projected will effectively bring about a degree of unbundling. The process needs to be carried through by effecting other identified reform measures, specifically by creating smaller generation and dis. tribution entities, including conversion of publicly owned units into private and joint sector ones. Sarily complete A degree of unbundling, and not separation, is the aim. Setting up of totally separate entities may involve high transaction costs in certain cases, without bringing commensurate benefits, it is feasible, for instance, for an SEB to privatize part of the distribution areas and retain ownership of the rest, along with the transmission segment. But in such cases, it is desirable to effect internal organizational adjustments that would facilitate effective regulation of each segment and the realisation of other objectives of reform.

One of the criteria to be kept in view in deciding the scope and form of unbundling is the extent of additional investment that needs to be attracted into each segment. It

was noted earlier that corporatisation would be a requirement for this purpose. The viability of the corporatised entity is therefore an important consideration.

Joint ventures are feasible means for attracting private investment, especially in areas where SEBs would not favour full privatisation, for instance, in transmission or for plant renovation involving significant capital outlay. Generally, though not necessarily, the management of the venture should be with the private partner who would also be expected to bring in all or most of the needed investment for expansion. Such arrangements could be fitted into the long-term policy decided upon by providing for optional buy-out of one party's interest by the other at a future date. The main advantages, apart from the infusion of much-needed capital, are professionalized management and fostering of competition within the sector through break-up of monopolies.

Developing countries that have gone in for power sector reform and privatisation have adopted unbundling as a key component of the process. Typically, they started by separating the three functions and settin u cor orate entities prior to privatisation of one or more segments. Some have travelled very far in introducing competition, such as Argentina which allows unrestricted entry into generation and pricing of bulk power supply through market competition.

The position with regard to developed countries is rather different. While there are over 3,000 distribution utilities in the US, three-fourths of the industry's customers and sales are accounted for by 262 privately owned vertically integrated electricity utilities. However, the sector as a whole is highly dis-aggregated because of multiplicity of players. Further, the elaborate regulatory systems provide a check on exercise of monopoly power by the utilities. In the UK, the privatised regional utilities combine all three functions but there are statutory provisions requiring that the generation, transmission and distribution segments function as separate business units,

In main power sector is arge enough to permit varying approaches suited to the local needs.

Privatisation of Distribution: It is recognised that inflow of private investment into generation cannot be sustained at the required scale without privatised distribution. The two prime considerations in this regard are: The needed investments in the distribution network for providing reliable supply.

Price-setting free of political influence-both of which publicly owned utilities are unable to ensure. (Even with one-time price reform, there is risk of future slide back).

A few private distribution licensees have been functioning for long, and successfully, in the country. Their operations (confined to urban and semi-urban areas) are governed by a very detailed scheme provided in the electricity statutes. Much of the Indian Electricity Act (I 91) is devoted to the rights and obligations of licensees, the manner of award of licences and standard terms thereof, circumstances of possible revocation before expiry of term etc. A good part of the Electricity (Supply) Act (1948) is devoted to the rights of SEBs vis-a-vis licensees and the obligations of the former towards the latter. The Sixth Schedule to the Act is devoted wholly to the financial regulation of licensees (excluding local authorities who operate licences) and the pricing of electricity to consumers.

In the very early phase of economic reforms in 1991, the licensee scheme was liberalised by raising the regulated rate of return by three percentage points and also extending the licence terms (original license from 20 years to 30 and extension periods from 10 years to 20).

Further changes in the listing of permitted expenses were made so as to facilitate the financing of expansion projects.

But despite the changes effected, the scheme existing in the statute books suffers from some serious limitations, principally the following:

It vests excessive discretionary powers in the State;

Under the scheme, important regulatory functions are assigned to the SEB, an arrangement that is inconsistent with current and future requirements;

The scheme is deficient with regard to incentives/penalties to ensure quality of supply; and

The pricing formula lacks transparency and any competitive element.

The prescribed pricing formula is also rigid; a provision in the E(S) Act, 1948, not only enjoins (Section 57) that the provisions of the Act's Sixth Schedule (dealing with the licensee's prices) shall be deemed to be incorporated in each licence, but also invalidates any agreement applicable to the licensee that is inconsistent with the Schedule.

The licensee scheme was designed nearly 50 years ago, when electricity supply was viewed purely as a public facility designed nearly 50 years ago, when electricity supply was viewed purely as a public facility for which Government was primarily responsible, and not as an industrial activity with large business potential, it is therefore not surprising that the scheme lacks provisions relating to competition and regulation autonomous of government control. Looking to current and future needs, however, the scheme's deficiencies are such as would gravely inhibit the inflow of investment on the one hand and the de-rival of cost and quality benefits by consumers on the other. The need to protect consumer interests and promote efficiencies also call for a recasting of the existing pricing formula along competitive lines.

The discretionary powers of the State (to modify terms of license, to terminate licenses in public interest and to effectively control tariff revisions on political considerations among others), will be discouraging to private investors who will be called upon to commit large sums with long payback periods. Transfer of such regulatory functions to agencies independent of Government would be needed to provide comfort to the private investor and security to lenders.

Likewise, the existing scheme allocates several regulatory functions to the SEB, including operational regulation, monitoring of performance standards and intervention in pricing. The SEB would, at the same time, be the monopoly provider of transmission. This combination of monopoly and regulation is again inconsistent with present needs. As regards performance standards, the need is to upgrade these to international levels; SEBs will not be in a position to enforce standards that they themselves will not be meeting. Privatisation implemented in other developing countries has provided for normative operational standards-regarding distribution

losses, grid design, manpower employed and so on-and a system of penalties for defaults on technical as well as commercial service to customer.

The limitations of the statute are further reinforced by serious practical obstacles;

The existing SEB tariff structure makes sure that only urban loads (predominantly industrial and commercial users, and high proportion of middle- and upper-slab domestic) will cover the licensee's costs and leave a surplus (permitted return); hence price reform is a prerequisite to privatisation of distribution.

Carving out such areas from the SEB network is messy and very time-consuming; it would involve the creation of separate profit centres with identifiable revenues and expenses, verification and evaluation of assets etc.

The problem of staff redeployment in privatising existing distribution areas, ideally, privatisation of distribution should be taken up as part of a comprehensive scheme for restructuring the sector. This would enable adequate planning and preparation of the desired level of privatisation, forms of competition to be introduced and the devising of a modified scheme more suited to present needs.

The key modifications to be made to the existing scheme would include competitively set-rather than administratively determined-rates of return, incorporation of detailed performance targets in the license terms, setting up within an agreed time limit of state-level independent regulatory agencies and compensation for assets at market values in the event of termination of license.

For effecting the key modifications, an important requirement will be state-level legislation. The legislation should cover long-term regulatory arrangements as well as price setting that would provide for performance-related incentives and penalties. The regulator should be independent of Government.

A comprehensive approach would involve separation of distribution from the rest of the SEB functions, preferably accompanied by corporatisation, thus clearing the way for private distributors to take over and operate whole zones.

It would be, however, realistic to anticipate and guard against certain problems:

If privatisation is rushed through without adequate preparation on both sides-SEB as well as licensee, the scheme will run into difficulties and disputes. If performance standards (investment to be brought in, dates by which system will be upgraded, standards of quality and reliability of supply to be met, etc), are not specified in detail and regulated adequately privatisation will not yield the intended benefits.

Without a minimum degree of acceptability within the SEB Organisation, staff problems could overwhelm the privatisation plans. An informed dialogue is needed to make the idea acceptable.

Unaccompanied by tariff reform, extensive urban-area-cen. tred privatisation within a state could leave the SEB with unviable rural loads, and wholly dependent on state government subsidies. This could work in the long term only if reliable provisions are made for subsidies to be phased out by the state.

It is recommended that the present licensee scheme could serve as a transitory arrangement for predominantly urban areas, provided the process is undertaken after careful preparation. The preparatory work will include demarcating viable areas into proper profit centres within the SEB frame. Work, negotiating details of asset transfer and staff redeployment. Accompanied with tariff reforms and the key modifications to the scheme, the licensees taking up urban areas could then, in stages, expand to semi-urban and even rural areas, and eventually operate whole SEB circles or zones.

As a measure to overcome problems arising from the low creditworthiness of their SEBS, certain states are approaching privatisation of distribution as a limited means to promote specific private generation projects. In this approach, financing of private generation projects will be supported by allotting bulk consumers or whole distribution areas to the private generation companies.

This is not a route to be recommended, but needs mention if only to underline the need for a carefully planned approach. States that do not follow a planned route for privating distribution are likely to be forced to adopt this inferior alternative.

The inadequacy from the sectoral point of view is that is approach will build up disparities within the system: select consumers will pay high prices for assured supply but benefits will not accrue to the rest of system. At best, this would serve to promote private generation in the short term. Measures towards price and regulatory reform would still need to be taken up; there is nothing to be gained by postponing these decisions through makeshift solutions.

Short of full privatisation of a select distribution area, improvements could be brought about through limited privatisaton of management. This could be considered especially for compact urban areas marked by high levels of losses and poor revenue collection. The target levels of improvement should be specified in the contract, which could also provide for incentives for better-than-target performance.

Privatisation of management is also an established means of transition to a full licence with transfer of ownership. The arrangement softens the impact of ownership change-on the workforce especially-and allows the private entrant time to get familiar with the system and plan the investments for improving it. The restructuring of the Orissa SEB provides for a five-year management period for the distribution zones that- are being priyatised (see box on Orissa privatisation). The concept could also be tried out in the generation segment, as for example for some of the generation units in Bihar which operate at present at very low availability and PLF levels.

Regulatory Issues :

Autonomous, decentralised regulatory institutions constitute the third component of sector reform. Autonomous regulation is necessary on three counts:

I Protection to the consumer of a utility service with strong monopolistic features,

I Protection to the investors who need to be encouraged to commit large sums to the sector. To balance the potentially conflicting interests of the customers and of the business based on socially equitable and economically sound principles.

It was noted earlier that the consumer has not received a deal in the existing arrangement of self-regulation by SEBS. Need for a regulatory agency independent of

the service-provider would assume further validity and urgency with expected private sector entry into electricity generation and distribution. There is also the need to reduce the risk for investors in the regulated industry, consistent with the protection of customers, so as to encourage investment and reduce the cost of capital, benefiting, in turn, the consumer, A further requirement is to oversee the orderly introduction of competition, over the long term, and to prevent abuse of any dominant position.

The role of government is now perceived as limited to ensuring the contextual framework within which utilities operate, that is, the legal structure and the macro-economic policy. Apart from the modern trend towards minimised regulatory role of government. One factor of particular relevance to India is the signal failure of government regulatory arrangements in realising a key objective of regulation: the viability of the state owned power sector undertakings.

Consumer tariffs will necessarily be set at the state level. The entry of private distributors will bring about changes in tariff levels within a state also. Both administrative and economic considerations would point to areas directly interfacing the consumer being regulated at the state level. These would include prices, quality of supply, award and revocation of licenses and fair practices by agencies that are in a position to exercise monopoly power.

Largely motivated by the need to ensure remunerative tariffs to SEBS, the Government decided in 1992 to set up a National Power Tariff Board and five Regional Tariff Boards. The decision remains to be implemented. The plan as formulated has the following shortcomings:

This will not be a regulatory body; the Board's findings are recommendatory in nature.

The regional configuration will seriously undermine the acceptability of the Board's recommendations by the consumers of concerned states.

In a competitive power sector, there are areas other than prices needing regulation, which cannot be left, as at present, to governmental agencies.

As far as pricing goes, it must be transparent at every level if commercialization and privatisation are to be politically acceptable and economically beneficial.

With regard to bulk generation prices, the transparency can be achieved through:

Competitive selection and price setting, where the adequacy of competition is established,

Where prices are not competitively established, a suitably devised project approval process that would safeguard public interest (discussed in detail later). An independent regulatory mechanism would definitely enhance the perception of transparency.

Consumer tariff transparency can be achieved through:

Periodically establishing the linkage between tariffs and authenticated costs.

By adhering to pre-specified limits of permissible cross-subsidisation while setting the tariffs,

By setting up institutional arrangements for disbursing subsidies in excess of the permitted levels of cross-subsidisation.

An area of particular regulatory concern would be the close review of the sources and rates of bulk power purchase by the distributor so as to ensure that the consumer is not exploited on the one hand and obtains the full benefits of competition on the other. These are specialised functions that can be best discharged by an agency comprising experts and enjoying a degree of autonomy to organise its work, conduct studies etc.

Developing countries that have initiated power sector reform have been motivated broadly by the same concerns that characterise the Indian situation. Typically, they have proceeded, at an early stage of the reform process, to set up independent regulatory agencies, As regards developed countries, the US has a long-established Federal Energy Regulatory Commission (FERC) and also state Public Utility Commissions (see box). In the UK, the Office for Energy Regulation (OFFER), periodically reviews and specifies the price caps and oversees non-discriminatory practices in the sector.

One of the recent concepts regarding regulation envisages the service or industry being regulated principally through varying types of competition. In the electricity industry, this would typically be the case with generation, which is not a natural monopoly. Where there are monopolistic characteristics, competition would be for the market (for franchises/licenses of specified duration). This would be the case for distribution, it is to be recognised, however, that competition cannot be a complete substitute for regulation. It can, though, minimise the role of the regulator to overseeing the orderly functioning of market processes of both types.

A possible road for the Indian power sector:

A regulatory model for the Indian power sector will need to have both central and state-level components Planning and entry regulation will necessarily have to be handled at the Centre, excepting for small projects which will operate strict within the state grid. CEA will provide the core of this regulatory regime, but important changes that would make it autonomous and bring full transparency to its regulatory functions will need to be made.

The state-level regulatory functions will be oriented towards ensuring standards of performance, consumer pricing, entry of licensees and their supervision, fair access to transmission, overseeing contracts etc.

The above functions will have to be transferred to an agency fully independent of Government-either a full-fledged regulatory commission or the SEB divested of its distribution functions. There will be an interface between state-level and Central regulation in the matter of pricing. There are several ways in which the responsibilities could be shared between Central and state institutions. One suggested approach is that Price of direct purchase of bulk power from an independent power producer (IPP) by a private distributor or state-level transmission company will be subject to scrutiny by state regulator.

The state regulatory agency will also be setting the price of transmission by state level undertakings; and

Price of generation by centrally owned undertakings and price of inter-state transmission will be determined through Central regulation,

Role and Structure of CEA: Regulatory reform would require essential changes in CEA's structure and functions, As embodied in the Electricity (Supply) Act, 1948, and in practice, CEA's functions and responsibilities are wide ranging and not exclusively regulatory. They are as follows.

I CEA's responsibilities cover areas of policy making, regulation, performance monitoring, technical advice and consultancy, fixation/ratification of bulk tariffs, financial monitoring, arbitration and collecting and publication of performance and commercial data,

CEA prepares short-term and long-term power plans, covering both generation and bulk transmission, ensuring that the plans are consistent with the national power policy CEA, which has the responsibility of techno-economically appraising and approving all power projects (excepting minor ones), interacts with SEBS, public sector generating companies and the Planning Commission for the implementation of projects and the Five-year Plans relating to the power sector. CEA is consulted in the allocation of central sector power.

I Other regulatory functions include the over seeing and monitoring of performance of the power industry, both technical and financial, and suggesting corrective measures to improve performance. With respect to tariffs, CEA has authority to approve tariffs proposed by central generating companies as also the tariff for nuclear power.

With the entry of several private power promoters, CEA's functions relating to technoeconomic approval of IPPs has come to include overseeing of contracts (Power Purchase Agreements) and tariffs associated with private generating companies. Now, looking to current and long term needs, three specific questions require to be discussed:

I In the first place, the process of techno-economic scrutiny of a large number of private power projects, most of them not selected competitively has placed new demands on CEA's functions in this area. The attempt, so far, has been to meet these demands within the existing framework. This approach has proved insufficient and is in urgent need of revision. Apart from strengthening the professional content of CEA's scrutiny the main requirement is to enhance transparency and thereby public acceptability, of its project and related price approvals.

A second identifiable need is the role to be expected of CEA in implementing far-ranging sectoral reform, At the central level, the reforms will be coordinated by the Ministry of Power; their implementation on the far-flung system will devolve on the states. The question is whether CEA, as structured at present, can provide all the technical and professional inputs for speedy implementation of the reforms or whether some changes would enhance CEA's capability in ways that would benefit the sector.

The third requirement relates to the specific functions that should remain centralised in this coordinating/regulating agency in the long term, assuming that sector reforms will be seen through within the next decade. Here, the new agencies that will be entering the sector-public, private, and regulatory (state-level)-will have to be kept in mind. The Expert Group therefore suggests the following changes Reasons justifying the need

for regulatory functions be kept autonomous of government were dealt with earlier. On the same principle, the purely regulatory functions to be discharged at the central level in the long.

The transition to fully privatised distribution, which poses special difficulties of asset transfer and staff redeployment, could be softened through management contract arrangements for limited periods.

The existing licence scheme could serve as an interim arrangement, but not as the long term vehicle for privatised distribution. For the long term, it should be replaced by a revised scheme that provides, inter-alia, for: high standards of quality and customer service, autonomous regulation to enforce those standards as well as to insulate the licensee from government interference, and m transparency in consumer pricing.

Identified regulatory functions both at state and Central level should be taken out of operative government control. State level regulation should have consumer tariffs, protection of legitimate interests of the sector entities and a level playing field for public and private operators as its focus. Central autonomous regulation should concern itself with bulk generation and transmission pricing, project approvals and enforcing right of access to the inter-state and inter-region network.

CEA should be reorganised into a Central Electricity Regulatory Commission, a compact technical and coordinating Central Authority, and Regional Authorities for the five regions.

Long Term Policy

As outlined in the preceding sections, the power sector is in urgent need of major reforms. Government policy relating to the reforms and their implementation has not been laid down in the required detail and several aspects, for instance, the long-term policy regarding pricing, phasing of tariff revisions, structural and regulatory issues are yet to acquire clarity. While the intentions of effecting price reform and inducting private participation in all the segments have been publicized repeatedly, the means for doing so and' the policy supports required for the purpose remain to be devised.

Private sector entry into power generation is one area where the attempt was made to provide specific policy supports with regard to pricing, and, responding to promoters' demands, a limited guarantee scheme. Four years on, it is now apparent that the policy inputs relating to IPPs are inadequate to jump-start the process of self-sustaining growth. Reasons for the failure would lie in the inherent limitations in the IPP policy itself and the lack of a comprehensive policy framework the sector as a whole.

The limitations in the IPP policy are dealt with in detail in the "Private Sector Financing" section later. We present below a brief review of the most recent effort initiated at national level (by National Development Council) to formulate comprehensive policy framework for the sector.

This Report of the Committee on Power set up by National Development Council (1995) would broadly serve as the guide to comprehensive reform of the power sector, The Report itself is still awaiting consideration by the NDC but contents have been released for the information of the public and may therefore, be referred to here. The

document examines the whole gamut of problems facing the power sector and endorses several ideas for reform, Among the more significant of the Committee's recommendations are the following:

term need to be kept outside operative government control. Three clear areas in this category are:

Approval to large power projects above a stipulated financial or capacity threshold. Bulk generation and transmission tariffs.

Enforcing the right of access to all eligible system entities and users, to the inter-state and inter-regional transmission network.

In the separate section on IPPs later, the imperative need to enlarge the project approval agency by inducting experts outside of CEA and permitting the enlarged autonomous body to stipulate its own transparent approval procedures has been argued in detail. It will obviously be appropriate for the same agency to examine and approve the bulk generation and transmission tariffs, and to discharge regulatory functions relating to right of access. But not so with regard to the role of implementing policies of sector reform-a function that could extend over a minimum of 10 years.

The recommended solution is to carve out an autonomous high level regulatory agency (Central Electricity Regulatory Commission) which will have members drawn from CEA as well as outside experts, and to retain the residual functions with CEA, which will be part of the government set-up, as at present. The Regulatory Commission's autonomy should be ensured through accepted methods: inter alia, fixed membership tenures, independent funding and authority to prescribe its own procedures, subject to the guidelines of a new statute.

It is further recommended that the CEA that would remain, should be reorganised on regional lines so that the Regional Authorities could identify with the specific needs of the region in matters of power development-which would vary for reasons of geography economics and the changes that would be initiated at the state level, and should play an active role in promoting sector reforms. A compact residuary set-up at the Centre would coordinate the work of the regions, provide technical support to the Ministry of Power as well as the Regulatory Commission and discharge such other functions as would need to be dealt with centrally.

There are several functions that can be discharged more efficiently in a regionalised rather than wholly centralised structure, Apart from the. coordinating role in sector reform mentioned above, three specific areas have been dealt with elsewhere in this chapter. The Regional Authorities should have the power to draw and disburse from a Central/state pool of funds, raising of which is recommended in the report of the NDC Committee on Power (discussed in detail later).

SEB Reform:

SEBs to be strengthened financially and organisationally Management to be professionalised

Top personnel to have fixed tenures SEBs to be permitted to function on commercial lines with ability to mobilise own resources. State government loans to be converted to equity issue of future restructuring kept open; expert studies be commissioned for the purpose.

Privatisation:

Existing and new power plants to be transferred to private/joint sector Limited privatisation of distribution (urban/semi-urban areas).

Tariffs:

Minimum agricultural tariff (50 paise/KWh) to enforced by all states Subsidy compensation to be made transparent Agricultural subsidies to be progressively phased out subsidies on foodgrains to be review tariff policies to be made transparent National and Regional Tariff Boards to be set up.

Role of CEA:

CEA's role to include greater focus on planning and power development.

CEA to be endowed with necessary autonomy in pen* nel recruitment, so as to function as independent technical authority at the national level.

CEA to act as single window for clearance of power projects by various Central and state agencies.

Other recommendations:

Central PSUs to be progressively restructured and fred from government control. New projects to be in joint sector, as far as possible. Existing standalone generating stations to be owned aM operated by separate companies. Gradual competitive bidding for power projects.

States to consider levy of a power development cess of 10 paise/KWh on total quantity of electricity consumed, for functioning hydro development, electricity conservation, R&D aM other activities in power sector.

There can be no disagreement that the key recommendations of the Report are in tune with the policy of economic liberalisation and the objective of commercilisation. The Report poides a badly needed policy platform for the Centre to activate various measures towards sector reform. In light of the assessed investment needs and the requirements for providing a power infrastructure that would efficiently support a globally competitive economy, there is justification for a more radical overhaul of the existing regulatory arrangements than what is recommended by the NDC Committee, The recommendations regarding Tariff Boards would leave open various other aspects that are ill-served by coifing arrangements, for instance, regulation of quality of service to consumer and prevention of exercise of monopoly in NW like transmission.

Some of the recommendations will need to be developed further, such as the policy regarding restructuring SEBS, The onganisational and financial outlays needed to implement the NDC Committee recommendations remain to be quantified. Here again, several issues will require to be developed further: the proposed power development cess being an obvious instance. Channeling of the funds that can be generated by this

means (approximately Rs 3 billion) would call for central intervention, especially for R&D and hydro power development (the latter potential is concentrated in states that would, pro rata, account for a small share of the cess income).

Even as the Report of NDC Committee is awaiting consideration by the National Development Council, the pressure of developments seems to be forcing some states to opt for more radical solutions than what the Committee has envisaged.

Several states have initiated measures towards power sector reform. Orissa, Utttar Pradesh, Haryana, Rajasthan and Bihar are getting World Bank assistance for the purpose. Orissa has progressed farthest in this respect (see box). The governments of UP and Haryana are currently examining the reports of consultants engaged through the World Bank. Bihar has sought World Bank assistance for restructuring studies and a proposal in this regard is under the consideration of the state government. The Andhra Pradesh government had appointed a committee of experts whose report is now with the state administration. The report recommends far-reaching changes that cover all areas of power sector reform, (see box), Meghalaya is contemplating wholesale privatisation of its SEB, on the recommendations of an external consultant.

The organisational structure of the Indian power sector was characterised by a high degree of uniformity. State-level variations came about with the setting up of power generation companies on the one hand and changes in the capital structure of some SEBs on the other. Further significant variations could result from the state-level changes in organisational and institutional structures, namely: The degree of unbundling that may be decided upon by each reforming state; The extent of privatisation that may be acceptable politically whether some of the states, individually, decide to set up state-level regulatory institutions. The institutional medium chosen for administering agricultural subsidies.

Uniformity of approach has no special merits in a sector that is potentially so diverse. Preference for such uniformity should not be the cause for delays in initiatives towards sector reform. It is recommended that the Ministry of Power should specify a core reform programme that should form part of all state-level initiatives of power sector restructuring, The core programme should include minimum required tariff reform (discussed earlier) and separation from government control of the regulatory function.

In formulating a comprehensive policy therefore, the broad thrust at the Central level should be to encourage multiple entities and varying ownership forms. At the SEBS, the larger ones especially would do well unbundling as would facilitate divestiture of o large scale and promote competition.

States that have already partially co-generation have the advantage of an earlier structure of ownership, if the decision to privatise would also have the option to promote private by allowing the generating companies to co supply direct to distributors.

Other Areas for Policy Support: The period of mal the sector that is immediately ahead also provide opportunity to initiate measures that would upgrade agencies to standards achieved by the sector advanced countries.

Time of Day Pricing: Because of the high power, a well defined time-of-day pricing form resultant component of demand side management and cost implications (time-

of-day m vented significant progress in this area. A major limitations on SEBs that prevent their function as commercial entities. It is expected that with the restructuring sector leading to clearer identification of the peaking power, the prices will be adjusted to the case of bulk consumers as also identifiable (commercial, agricultural and domestic).

Tapping Hydro Power potential: India has potential, its full exploitation calls for certain initiatives. A list of hydro projects compiled by Power (November 1994) identifies projects total of which projects adding upto 10,750 MW have CEA. These are now offered for private sector 40 per cent of the capacity listed is concentrate ern and eastern border states (Himachal Pradesh J&K Manipur, Mizoram and Sikkim) that lack the financial an technical resources as also current energy demand for exploitation. The states need to be helped to develop in coordination with other states in the region for the mutual benefit. Existing institutional arrangements are clear inadequate for this purpose.

There is a case here for setting up empower Regional Electricity Authorities (by decentralising some CEA's functions) with the specific timebound task of developing the hydro power potential and assisting the state concerned in this regard. The Authority could provide technical and coordination support on all related aspects like water sharing, royalties, etc.

Developing storage-type hydro power projects involve costs that are substantially higher than for there Special funding arrangements need to be devised to meet these costs; the suggestion of the NDC Committee to earmark proceeds from a power development cess for this purpose as to be followed up.