CHAPTER-V: GOVERNMENT COMMERCIAL AND TRADING ACTIVITIES

5.1 Overview of State Public Sector Undertakings

Introduction

5.1.1 The State Public Sector Undertakings (PSUs) consist of State Government companies and Statutory corporations. The State PSUs are established to carry out activities of commercial nature while keeping in view the welfare of people. In Arunachal Pradesh, there were seven PSUs (all companies including two non-working). None of these companies was listed on stock exchange.

5.1.2 The State working PSUs registered a turnover of ₹ 7.79 crore for 2009-10 as per their latest finalised accounts as of September 2010. This turnover was equal to 0.12 *per cent* of State Gross Domestic Product (GDP)♦ Thus the State PSUs occupy an insignificant place in the state economy. Major activities of Arunachal Pradesh State PSUs are concentrated in power sector. The working PSUs incurred an overall loss of ₹ 2.43 crore in the aggregate for 2009-10 as per their latest finalized accounts as of September 2010. They had employed 150 nos♣ of employees as of 31 March 2010. The State PSUs do not include prominent Departments such as Power, Hydro Power Development, Transport and Transport & Supply which are performing commercial nature of activities. The audit findings of these Government departments are also incorporated in this chapter.

5.1.3 During the year 2009-10, assets of the two non-working PSUs viz., Parasuram Cements Limited and Arunachal Horticulture Processing Industries Limited, were transferred to "Arunachal Pradesh Infrastructure Development Company Limited" a Joint Venture Company created by Arunachal Pradesh Industrial Development & Finance Corporation.

Audit Mandate

5.1.4 Audit of Government companies is governed by Section 619 of the Companies Act, 1956. According to Section 617, a Government company is one in which not less than 51 *per cent* of the paid up capital is held by Government(s). A Government company includes a subsidiary of a Government company. Further, a company in which not less than 51 *per cent* of the paid up capital is held in any combination by Government(s), Government companies and Corporations controlled by Government(s) is treated as if it were a Government company (deemed Government company) as *per* Section 619-B of the Companies Act.

5.1.5 The accounts of the State Government companies (as defined in Section 617 of the Companies Act, 1956) are audited by Statutory Auditors, who are appointed by

♦ The GDP figures in respect of 2009-10 is taken at factor cost by Industry of Origin at Current Prices
♣ As per the details provided by five PSUs.

CAG as *per* the provisions of Section 619(2) of the Companies Act, 1956. These accounts are also subject to supplementary audit conducted by CAG as per the provisions of Section 619 of the Companies Act, 1956.

Investment in State PSUs

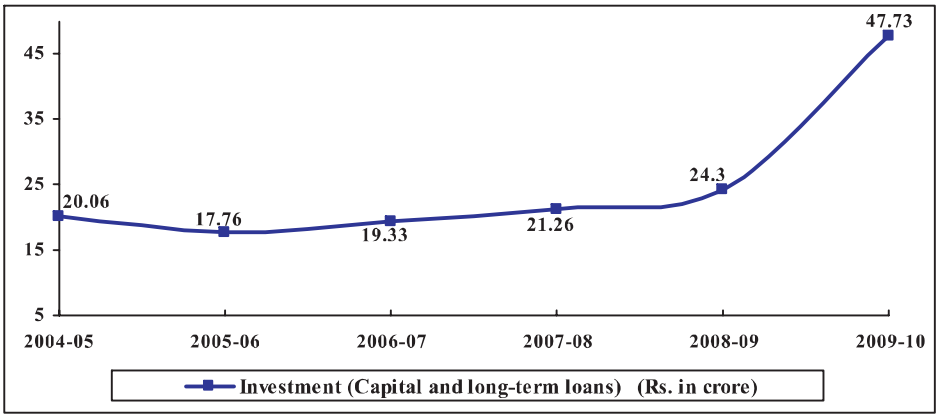
5.1.6 As on 31 March 2010, the investment (capital and long-term loans) in seven PSUs[#] was ₹ 47.73 crore as *per* details given below.

(Rupees in crore)

Type of PSUs	Government Companies		
	Capital	Long Term Loans	Grand Total
Working PSUs	16.60	27.97	44.57
Non-working PSUs	0.43	2.73	3.16
Total	**17.03**	**30.70**	**47.73**

A summarised position of government investment in State PSUs is detailed in **Appendix-5.1.**

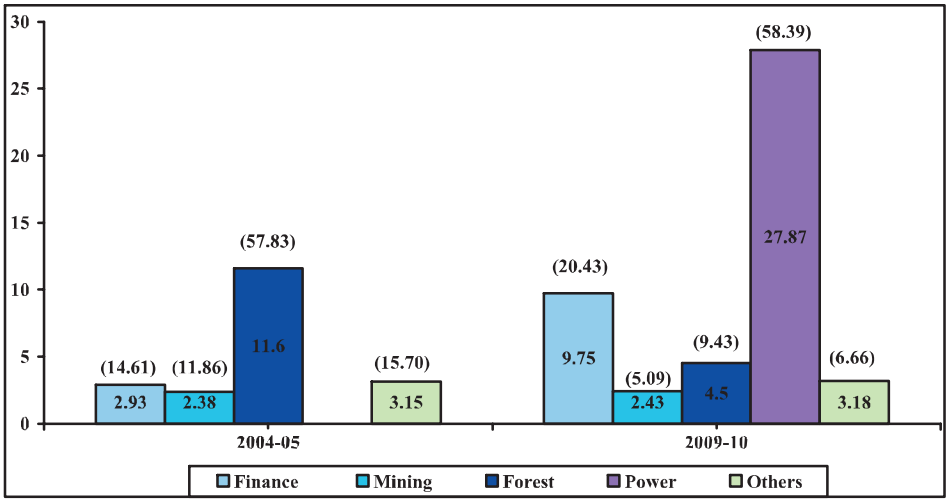
5.1.7 As on 31 March 2010, of the total investment in State PSUs, 93.38 *per cent* was in working PSUs and the remaining 6.62 *per cent* in non-working PSUs. This total investment consisted of 35.68 *per cent* towards capital and 64.32 *per cent* in long-term loans. The investment has increased by 137.94 *per cent* from ₹ 20.06 crore in 2004-05 to ₹ 47.73 crore in 2009-10 as shown in the graph below.



5.1.8 The investment in various important sectors and percentage thereof at the end of 31 March 2005 and 31 March 2010 are indicated below in the bar chart. The thrust of PSU investment was mainly in Power Sector which has 58.39 percentage of investment as of 31 March 2010 as against 'nil' during 2004-05. The entire investment of ₹ 27.87 crore relate to State Government's investment in one power sector company[*], out of which ₹ 22.87 crore was extended during 2009-10 in the form of loans (₹ 20.37 crore) and advance against equity (₹ 2.5 crore).

[#] The State had no 619.B company

[*] Hydro Power Corporation of Arunachal Pradesh Limited



(Figures in brackets show the percentage of total investment)

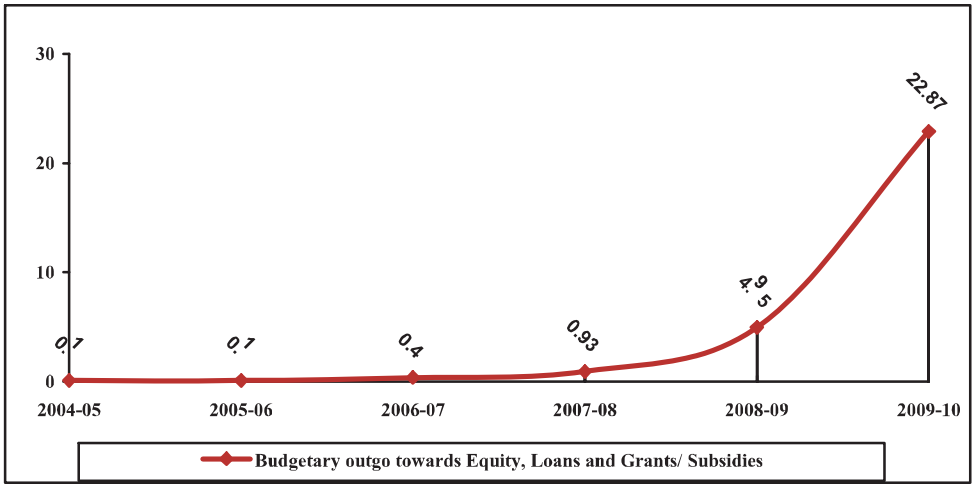
Budgetary outgo, grants/subsidies, guarantees and loans

5.1.9 The details regarding budgetary outgo towards equity, loans, grants/ subsidies, guarantees issued in respect of State PSUs are given in **Appendix-5.3.** The summarised details are given below for three years ended 2009-10.

(Amount Rupees in crore)

Sl. No.	Particulars	2007-08		2008-09		2009-10	
		No. of PSUs	Amount	No. of PSUs	Amount	No. of PSUs	Amount
1.	Equity Capital outgo from budget	-	-	1	4.95	1	2.50
2.	Loans given from budget	-	-	-	-	1	20.37
3.	Grants/Subsidy received	2	0.93	-	-	-	-
4.	Total Outgo (1+2+3)		0.93		4.95		22.87
5.	Loans converted into equity	-	-	-	-	-	-
6.	Loans written off	-	-	-	-	-	-
7.	Interest/Penal interest written off	-	-	-	-	-	-
8.	Total Waiver (6+7)	-	-	-	-	-	-
9.	Guarantees issued	1	0.97	2	0.77	-	-
10.	Guarantee Commitment	-	-	-	-	1	2.00

5.1.10 The details regarding budgetary outgo towards equity, loans and grants/ subsidies for past six years are given in a graph below.



5.1.11 The budgetary outgo towards equity, loans and grants /subsidy has increased significantly from ` 0.10 crore in 2004-05 to ` 22.87 crore in 2009-10 due to extension of budgetary support in the form of advance against equity (` 2.50 crore) and loan (` 20.37 crore) to one power sector company (ie. Hydro Power Development Corporation of Arunachal Pradesh Ltd). As on 31 March 2010, a guarantee commitment of ` 2.00 crore is pending against one PSU viz. Arunachal Pradesh Industrial Development & Financial Corporation Limited. No guarantee commission was payable to the State Government by the Government companies. There was no case of conversion of Government loan into equity, moratorium in repayment of loan and waiver of interest.

Reconciliation with Finance Accounts

5.1.12 The figures in respect of equity, loans and guarantees outstanding as per records of State PSUs should agree with that of the figures appearing in the Finance Accounts of the State. In case the figures do not agree, the concerned PSUs and the Finance Department should carry out reconciliation of differences. The position in this regard as at 31 March 2010 is stated below.

(Rupees in crore)

Outstanding in respect of	Amount as per Finance Accounts	Amount as per records of PSUs	Difference
Equity	9.04	17.03	7.99
Loans	-	27.51	27.51
Guarantees	-	2.00	2.00

5.1.13 We observed that the differences occurred in respect of all PSUs and the differences were pending reconciliation over the period of more than ten years. The matter has been taken up with the Secretary, Finance Department, Government of Arunachal Pradesh, Administrative Department of respective PSUs and the Managing Directors of PSUs periodically to reconcile figures. The Government and the PSUs should take concrete steps to reconcile the differences in a time-bound manner.

Performance of PSUs

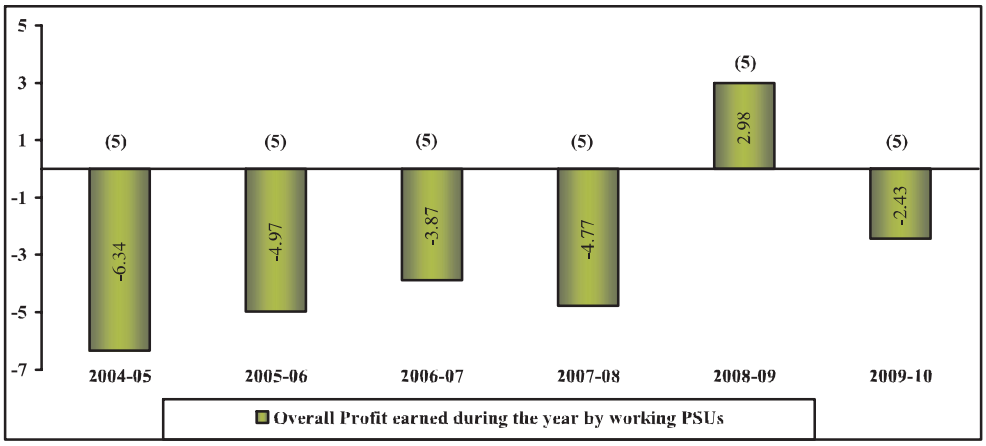
5.1.14 The financial results of PSUs are detailed in **Appendix 5.2.** A ratio of PSU turnover to State GDP shows the extent of PSU activities in the State economy. Table below provides the details of working PSU turnover and State GDP for the period 2004-05 to 2009-10

(Rupees in crore)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Turnover[∝]	5.57	5.91	5.94	5.72	5.57	7.79
State GDP	2853	2918	3413	3888	4547	6258
Percentage of Turnover to State GDP	0.20	0.20	0.17	0.15	0.12	0.12

The percentage of turnover to State GDP was on declining trend and reduced from 0.20 in 2004-05 to 0.12 in 2009-10.

5.1.15 Profit (losses) earned (incurred) by State working PSUs during 2004-05 to 2009-10 are given below in a bar chart.



(Figures in brackets show the number of working PSUs in respective years)

5.1.16 During the year 2009-10, out of five working PSUs, three PSUs[^] earned profit of ₹ 0.79 crore and two PSUs incurred loss of ₹ 3.22 crore. The contributors to profit were Arunachal Pradesh Industrial Development and Financial Corporation Limited and Arunachal Police Housing and Welfare Corporation Limited.

5.1.17 The State PSUs and State Government Departments incurred losses, as highlighted in the Audit Reports of CAG each year, mainly attributable to deficiencies in financial management, planning, implementation of project, running their operations and monitoring. A review of latest Audit Reports of CAG shows that the working State PSUs and Government Departments (Power, Transport and Supply) incurred losses to the tune of ₹ 26.08 crore and infructuous investment of ₹ 1.57 crore

[∝] Turnover of working PSUs as per the latest finalised accounts as of 30 September.
[^] Including one company (serial no. A-5 of Appendix 5.2), which earned a profit of ₹26,279.00 only

which were controllable with better management. Year wise details from Audit Reports are stated below.

(Rupees in crore)

Particulars	2006-07	2007-08	2008-09	2009-10	Total
Controllable losses as per CAG's Audit Report	1.22	3.21	5.93	15.72	26.08
Infructuous Investment	1.57	-	-	-	1.57

5.1.18 The above losses pointed out by Audit Reports of CAG are based on test check of records of PSUs/ Government Departments (Power, Transport and Supply and Transport). The actual controllable losses would be much more. The above table shows that with better management, the losses can be minimised (or eliminated or the profits can be enhanced substantially). The PSUs/Government Departments can discharge their role efficiently only if they are financially self-reliant. The above situation points towards a need for professionalism and accountability in the functioning of PSUs/ Government Departments.

5.1.19 Some other key parameters pertaining to State PSUs are given below.

(Rupees in crore)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Return on Capital Employed (*Per cent*)*	--	--	--	--	6.09	
Debt	10.69	8.29	9.87	11.76	9.87	10.33
Turnover[Υ]	5.57	5.91	5.94	5.72	5.57	7.79
Debt/ Turnover Ratio	1.92:1	1.40:1	1.66:1	2.06:1	1.77:1	1.32:1
Interest Payments	0.95	0.95	0.03	0.03	0.39	0.78
Accumulated Profits (losses)	0.56	0.49	(-) 1.62	(-) 3.19	2.64	4.06

5.1.20 As per the latest finalised accounts of *five* working companies, the capital employed was ₹ 53.69 crore and total return thereon amounted to ₹ (-) 1.74 crore in 2009-10 as compared to capital employed of ₹ 50.88 crore and total return on capital employed of ₹ 3.33 crore in 2008-09.

5.1.21 The State Government has not formulated (September 2010) any dividend policy.

Arrears in finalisation of accounts

5.1.22 The accounts of the companies for every financial year are required to be finalised within six months from the end of the relevant financial year under Sections 166, 210, 230, 619 and 619-B of the Companies Act, 1956. The table below provides the details of progress made by working PSUs in finalisation of accounts by September 2010.

[Υ] Turnover of working PSUs as *per* the latest finalised accounts as of 30 September.

* Nil figure represents negative return on capital employed.

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Number of Working PSUs	3	4	5	5	5
2.	Number of accounts finalised during the year	1	1	1	1	5
3.	Number of accounts in arrears	20	23	27	31	31
4.	Average arrears *per* PSU (3/1)	6.67	5.75	5.40	6.2	6.2
5.	Number of Working PSUs with arrears in accounts	2	3	5	5	5
6.	Extent of arrears in years	7 to 12	1 to 13	1 to 14	1 to 15	1 to 16

5.1.23 The reasons for delay in finalization of accounts are attributable to (i) lack of required control over the companies by Government, (ii) abnormal delay in compilation/approval of the accounts and (iii) inadequacy of manpower.

5.1.24 The State Government had invested ₹ 58.37 crore in six PSUs (Equity: ₹ 8.94 crore, loans: ₹ 29.02 crore and grant/subsidy ₹ 23.06 crore) during the years for which accounts have not been finalised as detailed in ***Appendix-5.4.*** Delay in finalisation of accounts may also result in risk of fraud and leakage of public money apart from violation of the provisions of the Companies Act, 1956.

5.1.25 The administrative departments have the responsibility to oversee the activities of these entities and to ensure that the accounts are finalised and adopted by these PSUs within the prescribed period. Though the concerned administrative departments and officials of the Government were informed by us, of the arrears in finalisation of accounts, no remedial measures were taken. As a result of this the net worth of these PSUs could not be assessed in audit. The matter of arrears in accounts was also taken up with the Chief Secretary/ Finance Secretary periodically to expedite the backlog of arrears in accounts in a time bound manner.

In view of above state of arrears, it is recommended that:

- **The Government may consider outsourcing the work relating to preparation of accounts wherever the staff is inadequate or lacks expertise.**
- **The Government may set up a cell in concerned administrative departments to oversee the clearance of arrears and set the targets for individual companies which would be monitored by the cell.**

Winding up of non-working PSUs

5.1.26 There were two non-working PSUs as on 31 March 2010. Of these, no PSUs have commenced liquidation process. However, during the year 2009-10, assets of the two non-working PSUs viz., Parasuram Cements Limited and Arunachal Horticulture Processing Industries Limited, were transferred to "Arunachal Pradesh Infrastructure Development Company Limited" (APIDCoL); a Joint Venture Company created by Arunachal Pradesh Industrial Development & Finance Corporation (APIDFC) The numbers of non-working companies remained two during past five years.

5.1.27 The non-working PSUs (Parasuram Cement Limited and Arunachal Pradesh Horticultural Processing Industries Limited) are required to be closed down as their existence is not going to serve any purpose. These PSUs are non-functioning from 1995 onwards.

Accounts Comments and Internal Audit

5.1.28 Three working companies forwarded their five audited accounts to AG during the year 2009-10 of which, Non Review Certificates were issued on two Accounts. One Account was revised by one company and based on revision, 'Nil' Comment Certificate was issued. Remaining two accounts of two companies were audited and comments were issued on these Accounts. The audit reports of statutory auditors appointed by CAG and the supplementary audit of CAG indicate that the quality of maintenance of accounts needs to be improved substantially. The details of aggregate money value of comments of statutory auditors and CAG are given below.

(Amount Rupees in crore)

Sl. No.	Particulars	2006-07		2007-08		2008-09	
		No. of accounts	Amount	No. of accounts	Amount	No. of accounts	Amount
1.	Decrease in profit	1	2.24	1	2.18	1	0.02
2.	Increase in loss	-	-	-	-	-	-
3.	Increase in profit	-	-	-	-	1	0.05
3.	Non-disclosure of material facts	1	-	1	-	2	-
4.	Errors of classification	-	-	-	-	-	-
5.	General	-	-	-	-	2	-

5.1.29 Some of the important comments in respect of accounts of companies are stated below.

Arunachal Pradesh Industrial Development & Financial Corporation Ltd (2007-08)

- The company has not disclosed treatment of taxes of income as per requirement of AS 22
- Non provision by the company towards interest payable to State Government and Arunachal Pradesh State Cooperative Apex Bank Limited amounting to ₹ 2.18 crore resulted in overstatement of profit to the same extent.

5.1.30 The Statutory Auditors (Chartered Accountants) are required to furnish a detailed report upon various aspects including internal control/ internal audit systems in the companies audited in accordance with the directions issued by the CAG to them under Section 619(3) (a) of the Companies Act, 1956 and to identify areas which needed improvement. An illustrative resume of major comments made by the Statutory Auditors on possible improvement in the internal audit/ internal control system in respect of one company (Hydro Power Development Corporation Arunachal Pradesh Limited) for the year 2009-10 is given below.

Sl. No.	Nature of comments made by Statutory Auditors
1.	Non-existence of system of Physical Verification of Cash and Imprest balances
2.	Absence of internal audit system commensurate with the nature and size of business of the company
3.	Non maintenance of cost records

Recoveries at the instance of audit

5.1.31 During the course of propriety audit in 2008-09, recoveries of ₹ 37.24 crore were pointed out to the Department of Power, against which, recoveries of ₹ 0.51 crore were admitted and recovered by the Department during the year 2009-10.

Reforms in Power Sector

5.1.32 Arunachal Pradesh has not formed any Electricity Regulatory Commission till date (September 2010) under the provisions of Section 83 of the Electricity Act 2003 with the objective of rationalisation of electricity tariff, advising in matters relating to electricity generation, transmission and distribution in the State and issue of licenses.

5.1.33 Memorandum of Agreement (MoA) was signed (July 2002) between the Union Ministry of Power and the State Government with a joint commitment for implementation of reforms programme in power sector with identified milestones. The progress achieved so far in respect of important milestones is stated below.

Sl. No.	Milestone	Achievement as at March 2010
1.	State Government will Corporatise the Electricity Department by 2006-07	Power & Electricity Department (P&E) is not yet Corporatised.
2	State Government will set up State Electricity Reforms Commission (SERC)/Joint Electricity Reforms Commission (JERC) by December 2003 and file tariff petition.	Not set up till date.
3	State Government will ensure timely payment of subsidies required in pursuance of orders on the tariff determined by JERC	JERC not set up
4	State Government will achieve 100 *per cent* electrification of villages by 2007	345 out of 402 villages (86 *per cent*) have been electrified (March 2009)

SECTION 'A' PERFORMANCE REVIEW

Performance Review relating to Department of Hydro Power Development

5.2 Power Generating Activities

Executive Summary

Power is an essential requirement for all facets of life and has been recognised as a basic requirement. In Arunachal Pradesh, generation of power is predominantly managed by Department of Hydro Power Development (Department). As on March 2010, the department had 76 hydro generating stations with an installed capacity of 57.39 MW under its jurisdiction.

Capacity Addition

The Department was not able to maintain pace in terms of capacity addition with the growing demand for power in the State. During the review period, actual capacity addition was only 24.73 MW against 122.13 MW required by the State leaving a shortfall of 97.40 MW against the addition required.

Planning

The department followed the approach of taking up and executing small and micro projects only. The department does not have a proper planning process involving preparation of documented plans for augmentation of generating capacity. There was no proper coordination with the other related agencies. The lack of coordination with the transmission utility resulted in non-development of a connected grid transmission facility for completed projects. The State Government created multiple agencies viz APEDA, HPDCAPL etc. with the objective of accelerating power generation in the State, which have not been effective.

This resulted in increased reliance on Central Sector despite the enormous potential for generation of hydro power in the State incurring extra expenditure of ₹202.11 crore.

Optimum utilisation of existing facilities

Against 33 units due for being taken up for Renovation and Modernisation/ Life extension (R&M/LE) programmes, only 11 units were actually taken up; of which activities in three units have been completed and eight were under execution. The projects were taken up for renovation after long delays. Twenty two units were not taken up for R&M/LE for want of funds.

Project Management

Out of 101 projects under implementation during review period, there were inordinate delays in case of 66 projects. The execution of 39 projects led to a cost overrun of ₹ 436.62 crore. In five major projects inordinate delay in execution led to a loss of generation of 1179.94 MU.

The failure to assess the water discharge correctly in the case of the Domkhrong project resulted in creation of excess capacity which would remain idle.

Contract Management

There were major lapses in dealing with disputes and conducting legal proceedings which caused huge delays and losses.

Operational Performance

The PLF achieved by the projects was much below the national average resulting in vast underutilisation of capacity to the extent of 403.68 MU.

The total number of hours lost due to planned outages increased from 1.54 per cent to 3.93 per cent of total available hours in the respective years. On the other hand, the forced outages in power stations increased from 61.48 percent to 67.67 per cent of total available hours in the respective years. There were long delays in restoring projects after forced outages.

Auxiliary Consumption

As against the norm of 0.50 percent of the power generated for auxiliary consumption, the actual auxiliary consumption of power stations increased from 2.27 per cent in 2005-06 to 2.74

per cent in 2009-10 resulting in excess consumption of 6.45 MU.

Repairs and maintenance

As reported by the department to the CEA (2008) no advance maintenance schedule was prepared.

The average annual generation after completion of R& M works in Kipti I project based on generation from August 2009 to March 2010 was 1.81 MU only as against the average annual generation obtained from the project prior to R&M works of 2.54 MU. Thus, expenditure on repairs remained unfruitful.

Financial Management

The efficiency in realisation of dues was poor and the revenue realisable as on March 2010 was ₹58.35 crore. One of the two central sector companies involved in development of power projects in the State did not pay interest bearing advance and development expenditure in lieu of upfront fee.

Monitoring by top management

The monitoring of generation by the department was inadequate and needs improvement. The corporatisation of power utilities and setting up of a State Regulatory Commission as envisaged in the Electricity Act 2003 has not been implemented.

Conclusion and Recommendation

The company failed to meet the growth in peak demand due to delay in planning and implementation of capacity addition programmes. The existing generating units were ageing and there were abnormal delays in taking up/executing new projects and renovation and modernization of existing projects. The efficiency of operations and capacity utilization was poor. The review contains seven recommendations which include intensification of capacity addition programmes, improving plant load factor and capacity utilization

Introduction

5.2.1 Power is an essential requirement for all facets of life and has been recognized as a basic human need. The availability of reliable and quality power at competitive rates is very crucial to sustain growth of all sectors of the economy. The Electricity Act, 2003 provides a framework conducive to development of the Power Sector, by promoting transparency and competition and protecting the interests of the consumers. In compliance with Section 3 of the *ibid* Act, the Government of India (GOI) prepared the National Electricity Policy (NEP) in February 2005 in consultation with the State Governments and Central Electricity Authority (CEA) for development of the Power Sector based on optimal utilisation of resources like coal, gas, nuclear material, hydro and renewable sources of energy. The Policy aims at, *inter alia*, laying guidelines for accelerated development of the Power Sector. It also requires CEA to frame NEP for every five years with a 15 years' perspective. The plan envisaged a capacity addition programme to meet the shortage of power in line with the National Policy of Power for all by 2012.

Power Sector in Arunachal Pradesh

5.2.2 In Arunachal Pradesh, the predominant source of power is hydro power. The generation of hydro power is carried out by the Department of Hydropower Development (department) since 2005. The overall management of the department is vested with the Secretary (Power department) to the Government of Arunachal Pradesh. The day-to-day operations of the department are carried out by the Chief engineer (DHPD), who is the Chief Executive of the Department, with the assistance

of other technical and non-technical staff. The Department had 76 hydro generating stations with an installed capacity of 57.39 MW under its jurisdiction (March 2010).

While the bulk of the generation of hydro power in the State is carried out by the department, a minor source of generation is the very small hydro electric power plant set up independently by the Arunachal Pradesh Electricity Development Authority (APEDA), a society established in the year 1996. The generation from these projects is utilized by small isolated villages and is managed separately outside the purview of the State Government.

Apart from hydropower, there is generation from 124 thermal (diesel) generating stations with the installed capacity of 25 MW by the Department of Power (DOP), the Transmission and Distribution entity which also manages the purchase of power to meet the shortfall in generation. However, diesel generation is being phased out and the actual generation is minimal (March 2010). Thus, the power generation in the State apart from the hydro power generation by the department is miniscule and insignificant.

From the year 2005-06, the State initiated steps to augment the generation of hydro power with the participation of major public and private companies. To monitor the progress of activities in this regard, a separate office of the Chief Engineer (Monitoring) was constituted (December 2008) under the Department. The State Government also set up (December 2006) a new company, Hydro Power Development Corporation of Arunachal Pradesh Limited (HPDCAPL), for establishing new hydro electric projects.

Present Status of Power System

5.2.3 The Power System in Arunachal Pradesh comprises of scattered and isolated generating stations feeding adjacent areas without interconnectivity. Though the State has very high potential for generating power of 57000 MW, the aggregate maximum demand is met only partially through generation from within the State. The sources of meeting the demand for power are isolated small and micro hydel projects managed by the department (11.32 *per cent*), diesel generating sets managed by DOP (0.53 *per cent*) and purchase from Central Power Sector Companies including free share (88.15 *per cent*).

During 2005-06, normal maximum electricity requirement in Arunachal Pradesh was assessed as 600 Million Units (MU) of which only 549 MU were available leaving a shortfall of 51 MU, which worked out to 8.50 *per cent* of the requirement. The total installed power generation capacity in the State was 57.66 Mega Watt (MW) and effective available capacity was 45.00 MW against the peak demand of 95 MW leaving deficit of 50 MW. During 2009-10, the comparative figures of normal maximum energy requirement and available power were 1575 Million Units (MU) and 487.97 MU with deficit of 1087 MU. Thus, there was a growth in demand of 975 Million Units (MU) during the five years. However, capacity increased to 82.39 MW at the end of 2009-10, with capacity addition of 24.73 MW during the review period.

The turnover of the department representing sale of power effected by the DOP was ₹ 75.81 crore which was equal to 1.21 *per cent* of the State Gross Domestic Product for the year 2009-10. It employed 3070 employees (including casual and work charge staff) as on 31 March 2010.

Scope and Methodology of Audit

5.2.4 The present review conducted during February 2010 to June 2010 covered the performance of the department from 2005-06 to 2009-10, though the functions of DOP were also reviewed to a limited extent related to the generation of power from diesel, management of purchase/drawal of central sector power and creation of transmission facilities for generation capacity of the department. Apart from the offices of the Chief Engineers, the department functions through nine civil divisions and five electromechanical divisions spread throughout the State

The review mainly deals with Planning, Project Management, Financial Management, Operational Performance, Environmental Issues and Monitoring. The audit examination involved scrutiny of records at the offices of the Chief Engineers, three civil divisions at Lhou, Bomdila and Ziro and the related electromechanical divisions at Lhou and Ziro. While the performance of the generating stations was reviewed in general, the records of 16 out of 76 hydro generating stations constituting 43 *per cent* of the installed capacity were reviewed in particular.

The methodology adopted for attaining the audit objectives with reference to audit criteria consisted of explaining audit objectives to top management, scrutiny of records, interaction with the auditee personnel, analysis of data with reference to audit criteria, raising of audit queries, discussion of audit findings with the management and issue of draft review to the management for comments.

Audit Objectives

5.2.5 The objectives of the performance audit were to assess:

Planning and Project Management

- To assess whether capacity addition programme taken up/ to be taken up to meet the shortage of power in the State is in line with the National Policy of Power for All by 2012;
- To assess whether a plan of action is in place for optimization of generation from the existing capacity;
- To ascertain whether the contracts were awarded with due regard to economy and in transparent manner;
- To ascertain whether the execution of projects were managed economically, effectively and efficiently; and
- To ascertain whether hydro projects were planned and formulated after taking into consideration the optimum design to get the maximum power, dam design and safety aspects.

Financial Management

- To assess the soundness of financial health of the generating undertakings; and
- To assess whether all claims including energy bills and subsidy claims were properly raised and recovered in an efficient manner; and

Operational Performance

- To assess whether the power plants were operated efficiently and preventive maintenance as prescribed was carried out minimizing the forced outages;
- To assess whether the manpower requirement was realistic and its utilization optimal;
- To assess whether the life extension (renovation and modernization) programmes were ascertained and carried out in an economic, effective and efficient manner; and
- To assess the impact of R&M/ LE activity on the operational performance of the units; and

Monitoring and Evaluation

- To ascertain whether adequate MIS existed in the entity to monitor and assess the impact and utilize the feedback for preparation of future schemes.

Audit Criteria

5.2.6 The audit criteria adopted for assessing the achievement of the audit objectives were:

- National Electricity Plan, norms / guidelines of the CEA regarding planning and implementation of the projects;
- Standard procedures for award of contract with reference to principles of economy, efficiency and effectiveness;
- Targets fixed for generation of power ;
- Parameters fixed for plant availability, Plant Load Factor (PLF) etc;
- Performance of best achievers in the regions/all India averages;
- Prescribed norms for various performance parameters.

Financial Position and Working Results

5.2.7 The department follows a system of preparing Accounts as per the format of CPWA code of accounts. Audit obtained the data from the Accounts wing of the department as reconciled with the office of the Accountant General and the depreciation figures were estimated on the basis of the above data. The figures for the year 2009-10 are provisional (based on an accretion factor of 10 *per cent*) as the reconciliation of accounts was pending (August 2010).

The working results like cost of generation of electricity, revenue realisation, net surplus/ loss and earnings and cost per unit of operation for the five years ending 2009-10 are given below:

(Rupees in crore

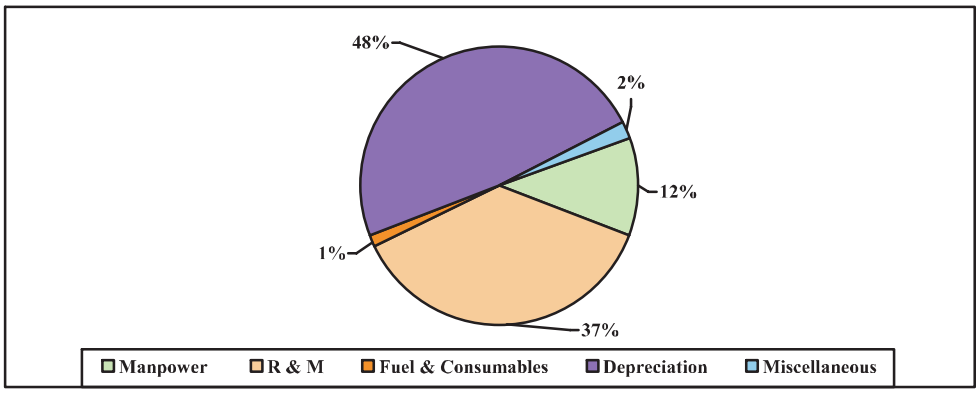
Sl. No.	Description	2005-06	2006-07	2007-08	2008-09	2009-10
1.	**Income *(Dept. of Power)***					
	Generation Revenue	72.86	76.30	109.37	118.00	75.81
	Total Income	**72.86**	**76.30**	**109.37**	**118.00**	**75.81**
2. A	**Generation**					
	Total generation (In MUs)	52.02	57.51	57.10	54.84	58.11
	Less: Auxiliary consumption (In MUs)	1.18	1.69	1.78	1.75	1.59
	Net generation available for Transmission and Distribution (In MUs)	**50.84**	**55.52**	**55.32**	**53.09**	**56.52**
2. B	**Power Purchase (MU)**	**503.33**	**452.91**	**571.01**	**592.21**	**432.40**
	Total Power available for sale	**554.17**	**508.43**	**626.33**	**645.30**	**488.92**
3.	**Expenditure**					
(a)	**Fixed cost**					
(i)	Employees cost	2.37	3.37	3.43	4.59	5.05
(ii)	Administrative and General expenses	2.03	0.99	0.30	0.73	0.80
(iii)	Depreciation	5.39	6.44	8.30	14.46	21.23
	Total fixed cost	**9.79**	**10.80**	**12.03**	**19.78**	**27.08**
(b)	**Variable cost**					
(i)	Fuel consumption (Diesel)	8.42	6.61	5.43	5.18	0.62
(ii)	Lubricants and consumables	6.85	7.94	7.49	14.73	16.21
(iii)	Power purchase	99.81	93.00	88.50	112.51	92.16
	Total variable cost	**115.08**	**107.55**	**101.42**	**132.42**	**108.99**
C.	**Total cost 3(a) + (b)**	**124.87**	**118.35**	**113.45**	**152.20**	**136.07**
4.	**Excess of cost over income**	**52.01**	**42.05**	**4.08**	**34.20**	**60.26**
5.	Realisation (per unit)	1.32	1.50	1.75	1.83	1.56
6.	Fixed cost (per unit)	0.18	0.21	0.19	0.31	0.55
7.	Variable cost (per unit)	2.08	2.12	1.62	2.05	2.24
8.	Total cost per unit (5+6)	2.26	2.33	1.81	2.36	2.79
9.	Contribution (4-6) (per unit)	-0.76	-0.60	0.13	-0.22	-0.68
10.	**Profit (+)/Loss(-) (4-7)**	**-0.94**	**-0.83**	**-0.06**	**-0.53**	**-1.23**

As can be seen from the above, that the department was unable to realize its costs from the revenue. This is mainly on account of the small and uneconomic nature of the micro hydel stations and the inadequacy of the tariff fixed to recoup the costs incurred including the cost of purchase of power.

Elements of Cost

5.2.8 Depreciation and Maintenance constitute the major elements of costs. The percentage break-up of costs for 2009-10 is given below in the pie-chart.

Components of various elements of cost

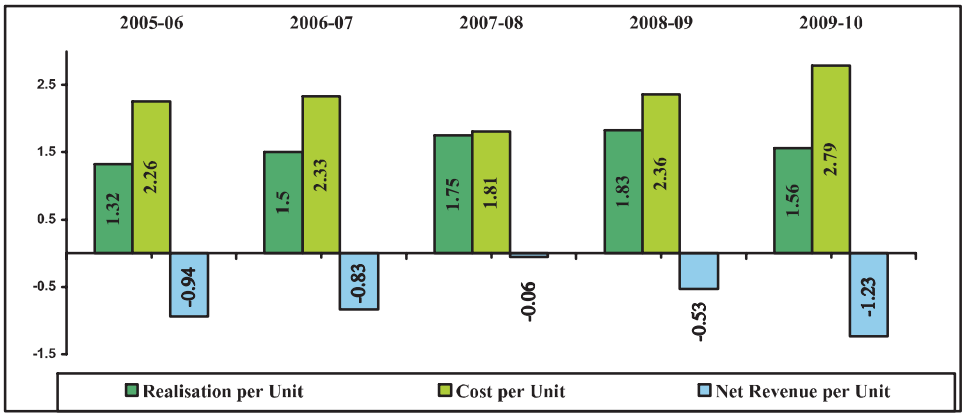


Elements of revenue

5.2.9 Sale of Power constitutes the only element of revenue.

Recovery of cost of operations

5.2.10 The Department was not able to recover its cost of operations. During the last five years ending 2009-10, the net revenue showed a negative trend as given in the graph below:



Had the total revenue earned by Department been sufficient to cover the cost, an additional amount of ₹ 192.60 crore could have been made available for capacity addition/life extension programmes. The main reasons for high cost of generation/supply was poor capacity utilization and huge expenditure on power purchases.

Audit Findings

5.2.11 Audit explained the audit objectives during an 'entry conference' held on 27 January 2010. The audit findings were reported in July 2010 and discussed in an 'exit conference' held on 3 September 2010. The views expressed by the department in the meeting and its written replies were considered while finalising this review. The audit findings are discussed below.

Operational Performance

5.2.12 The operational performance of the Department for the five years ending 2009-10 is given in the ***Appendix*.5.5**. It was seen that the Department was not able to maintain pace in terms of capacity addition with the growing demand for power in the State. While the demand increased by 162.5 *per cent* from 2005-06 to 2009-10, the capacity addition has increased only by 42.89 *per cent*. The gap between demand and capacity addition has increased from 35.83 MW in 2005-06 to 122.40 MW by 2009-10 (excluding diesel capacity which is being phased out). The efficiency of generation was also going down and the PLF decreased from 15.96 *per cent* in 2005-06 to 11.04 *per cent* in 2009-10. Audit findings discussed in the subsequent paragraphs show that there was scope for improvement in performance as the degree of capacity augmentation and efficiency of operations was poor.

Planning

5.2.13 The National Electricity Policy aims to provide availability of over 1,000 Units of per capita electricity by 2012. In accordance with the national policy which emphasized full development of hydro power potential in the country, the State Government formulated policies for development of hydro power. The policies intended to tap the huge hydro potential of the State which was estimated at 57000 MW.

The first policy notified in August 2005, encouraged development of projects by interested developers including the private sector on Build Own Operate /Build Own Transfer basis after executing Memorandums of Agreement (MOA) with the State Government. The State was to be given a minimum free share of 12 *per cent* of the power generated. The MOAs were to be signed after evaluation of the technical and financial credentials of the private developers and after approval of Preliminary Feasibility Reports (PFR) and Detailed Project Reports (DPR) prepared by them.

Subsequently in the year 2008, the State Government notified separate policies for projects with capacity upto 25 MW and projects with capacity above 25 MW. As per policy, after selection on the basis of eligibility and qualification criteria based on their applications, the developers were required to sign MOAs with the State Government. The projects were to be developed on Build, Own, Operate and Transfer (BOOT) basis and handed over to the Government after the expiry of 50 years (small projects) and 40 years (big projects) respectively from the date of commercial operation. The big Projects up to 100 MW were to be awarded through negotiated MOA route and projects above 100 MW through competitive bidding as per the guidelines of GOI. The policies provided for specific quantum of free power to the State after commissioning and payment of non-refundable upfront premium. The projects may also be developed by the State Government through joint ventures in which the Government was to be represented by HPDCAPL/any other agency.

Shortfall in generation

5.2.14 The planning failures have resulted in huge shortfall in generation. During the period from 2005-10, the actual generation was substantially less than the peak as well as average demand as shown below:

Year	Generation (MW)	Peak Demand	Average Demand	Percentage of actual generation to Peak Demand	Percentage of actual generation to Average Demand
2005-06	5.80	95	55	6.11	10.55
2006-07	6.34	115	70	5.51	9.06
2007-08	6.32	144	85	4.39	7.44
2008-09	6.06	180	105	3.37	5.77
2009-10	6.45	225	135	2.87	4.78

As may be seen from the above, the actual generation was only 4.78 to 10.55 *per cent* of the average demand and 2.87 to 6.11 *per cent* of the peak demand.

This resulted in increased reliance on power from Central Sector despite the enormous potential for generation of hydro power in the State. The State's share of Central Sector power which was 118 MW increased to 120 MW from 2008-09.

However, the total supply even after import was not sufficient to meet the peak demand, as shown below:

Year	Peak Demand (MW)	Peak Demand met	Sources of meeting peak demand (MW)		Peak deficit	Peak Deficit (Percentage of Peak Demand)
			Own	Import		
2005-06	95	50	5.80	57.46	45	47.37
2006-07	115	55	6.34	51.70	60	52.17
2007-08	144	75	6.32	65.18	69	47.92
2008-09	180	79	6.06	67.60	101	56.11
2009-10	225	83	6.45	49.36	142	63.11

There remained a shortfall of 44.74 to 142 MW with reference to peak demand (47.09 to 56.11 *per cent*) even after import (purchase).

Though the quota of central sector power was sufficient, due to the shortfall in supply of central sector power during the winter months the State resorted to overdrawal or unscheduled interchange (UI) from the North Eastern Grid to tide over the power shortages. This has caused huge expenditure of ₹ 66.49 crore in the form of UI charges during 2006-7 to 2008-09 which could have been avoided had the department been able to augment the generating capacity.

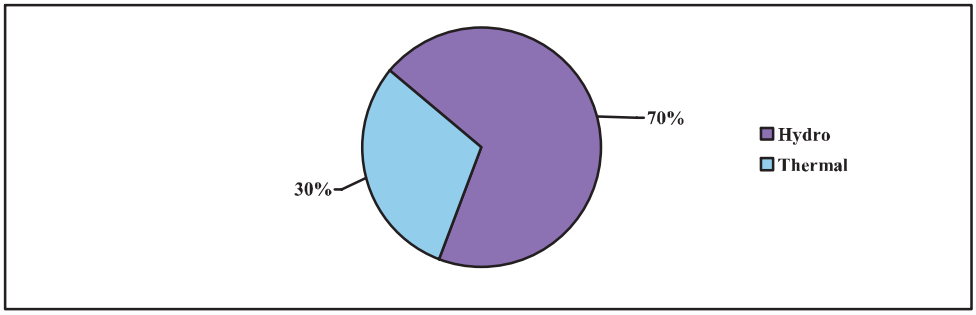
Additional expenditure due to excess cost of central sector power

5.2.15 The increased reliance on the Centre Sector has caused extra expenditure of ₹ 202.11 crore as the cost of central power was higher than own generation as detailed below:

Year	Units purchased (MU) (excluding free power)	Cost per unit	Generation cost per unit	Excess Purchase cost per unit	Total Excess cost (₹ in crore)
2005-06	334.55	2.98	1.49	1.49	49.96
2006-07	340.39	2.73	1.19	1.54	52.49
2007-08	389.49	2.27	1.22	1.05	40.98
2008-09	353.73	3.18	2.26	0.92	32.57
2009-10	310.10	2.97	2.13	0.77	26.11
Total	**1728.26**				**202.11**

Capacity Additions

5.2.16 The State had a total installed capacity of 57.66 MW at the beginning of 2005-06 which increased to 82.39 MW (including diesel) at the end of 2009-10. The breakup of generating capacities, as on 31 March 2010, under thermal (diesel), and hydro is shown in the pie chart below.



To meet the energy generation requirement of 1575 MUs in the State, a capacity addition of about 122.13 MW was required during 2005-06 to 2009-10. However, the State Government did not plan any capacity addition during the review period.

The particulars of capacity additions envisaged, actual additions and peak demand vis-à-vis energy supplied (hydel) during the review period are given below.

Sl. No	Description	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Capacity at the beginning of the year (MW)	57.66	57.66	57.66	58.72	68.72
2.	Actual capacity additions (MW)	-	-	1.06	10.00	13.67
3.	Capacity at the end of the year (MW) (1 + 4)	57.66	57.66	58.72	68.72	82.39
4.	Peak demand (MUs)	600	700	1000	1260	1575
5.	Energy supplied (MUs)					
	a) Energy produced	45.67	51.51	52.21	51.29	55.52
	b) Energy Purchased	503.33	452.91	571.01	592.21	432.40
6.	**Shortfall in demand (MUs)**	**51.00**	**195.58**	**376.78**	**616.50**	**1087.08**

It would be seen from the above that during the review period, the demand increased from 600 MU to 1575 MU increasing the resultant shortfall in availability of power from 51 MU to 1087 MU due to nominal capacity addition of 24.73 MW.

There was no planning of capacity additions to meet the targets. The department did not have any documented proper plan against which it executed the capacity addition and actual additions were made purely on adhoc basis. The department followed the approach of taking up and executing small and micro projects only.

However, in pursuance of the 50000 MW capacity augmentation programme launched by the Prime Minister (May 2003), the State Government framed its own policies on generation of hydro power, which encouraged participation of the private sector in power generation. MOUs were signed for a total number of 122 projects (June 2010) including 120 projects from the year 2005-06 onwards for a total capacity of 41106.90 MW. Four projects each were allotted to the Central power sector companies, viz NHPC and NEEPCO, one project to a State Government company and the remaining 113 to private developers. Of these, one project under the central sector (Ranganadi Stage I) was completed in 2003 and of the remaining, five are under execution. Seven projects were allotted as joint ventures with the State Government. A total amount of ₹ 1025.57 crore was received as upfront premium including processing fee (June 2010).

For many of these projects, DPRs have not been prepared due to non-availability of hydrological data with the developers. The work has not commenced in respect of 115 projects and the proposed commissioning dates of the projects vary from the year 2015 to 2018. Therefore, the benefits of additional power will accrue to the State only after a minimum period of five years.

The department stated that it could not execute big projects due to fund constraints, logistic problems and its policy to encourage small projects. The delay in awarding big projects to private/public sector developers was attributed to lack of Government policy.

Absence of documentation and poor co-ordination

5.2.17 The department does not have a proper planning process involving preparation of documented plans for augmentation of the generating capacity. Neither short run plans nor a long term/ corporate plan is prepared. The department executes projects on ad-hoc basis based on availability of funds and Government policy. The State Government often sanctioned projects without consultation with the department regarding load demand, resulting in setting up of small projects which had unutilized generation capacity which was in excess of demand and could not be utilised in the absence of a connected grid. Structured planning including preparation of a comprehensive documented plan for generation considering load demand and anticipated increases, quantum of own generation/receipt of power from central sector, sources of funds and other factors required to be developed both for the short and long run.

Generation projects are not implemented in consultation with other agencies such as APEDA, HPDCAPL and the State Load Despatch Centre (SLDC) under DOP (which is involved in load studies and load management). Further, as the generation made by the department is to be taken over by DOP through its transmission set up, while embarking on generation projects, the department should ensure that the related transmission network for evacuation of power is being developed by the DOP. However, the generation projects are finalized by the department without considering the planning for transmission by DOP resulting in many a situation where the

transmission lines are not ready or the load requirement is non-existent when the projects are completed. The occasional meetings held with the various agencies have not been successful in bringing about effective co-ordination.

The department stated that the DOP faced shortage of funds for developing the transmission part of the projects completed by the department, implying the absence of planning for joint/simultaneous management of funds required for a project by both the departments. Barring a few instances in the PM's package which was allotted to both the departments, the department has followed the approach of arranging funds for its requirements only.

Absence of state wide grid

5.2.18 The DOP failed to develop a state-wide grid in line with the expanding generation capacity of the State resulting in isolated operation of projects with the distribution of power restricted to a limited area. In several cases in the State, the generation from a project was much in excess of load available in the local areas and the absence of a connected grid to transport the power to other needy areas curtailed generation capacity.

Creation of multiple agencies

5.2.19 Though the State Government created multiple agencies, *viz.,* APEDA, HPDCAPL etc. entrusted with the objective of accelerating power generation in the State, they have not been effective as stated below:

- HPDCAPL has no potential for generation of revenue and has commenced execution of one project only through a contract awarded to a firm during the four years of its existence. It is entirely dependent on Government funding for its day to day existence.
- Despite creation of APEDA for development of mini hydel projects below one MW, the department continues to be involved in execution of these projects.

Lack of autonomy

5.2.20 One of the main deficiencies affecting the department is its lack of autonomy. Though the Electricity Act, 2003 requires the unbundling of the Electricity Boards into companies, this has not been implemented in the State as the power utilities function as departments. The department is entirely dependent on the State Government for budgetary support as it does not generate any income of its own. The power generated is transferred to the another department without any levy. The entire responsibility of procuring funds and repaying loans lies with the State Government. The decisions relating to selection of projects for generation and award of contracts also rests with the Government.

Failure in Optimum Utilisation of existing facilities

5.2.21 In order to cope with the rising demand for power, not only was additional capacity required (to be created), but a plan needed to be in place for optimal

utilisation of existing facilities and undertaking life extension programme/ replacement of the existing facilities which were near completion of their age and timely repair/ maintenance. The details of the power generating units, which fell due for Renovation and Modernisation/ Life extension programmes during the five years ending 2009-2010 vis-à-vis actually taken up are indicated in **Appendix5.6**. The CEA norms for renovation and modernisation were not applied as the vast majority of the units under the department do not come within the purview of the CEA as the individual capacities were below the minimum of 3 MW set by the CEA.

Against 33 units due for being taken up for Renovation and Modernisation/ Life extension programmes, only 11 units were actually taken up, of which three have been completed and eight were under execution. The projects were taken up for renovation after long delays and many of the projects in operation have exceeded their life span. The remaining 22 units could not be taken up as planned due to non-availability of sufficient funds and delays in finalisation of DPRs etc.

Project Management

5.2.22 Preparation of accurate and realistic Draft Project Reports (DPR) after feasibility study considering factors like creation of infrastructure facility and addressing bottlenecks likely to be encountered in various stages are critical activities in the planning stage of projects.

Project management includes timely acquisition of land, effective actions to resolve bottlenecks, obtaining necessary clearances from Ministry of Forest and Environment and other authorities, rehabilitation of displaced families, proper scheduling of various activities using Programme Evaluation and Review Technique (PERT) / Critical Path Method (CPM) /other techniques, making adequate budget provisions etc. Notwithstanding, time and cost over runs were noticed in the implementation of the projects during review period as discussed in succeeding paragraphs. The particulars of the projects leading to cost and time overrun are given in the **Appendix 5.7**

Time and cost over run

5.2.23 In turnkey projects the department allowed three years time for completion of various projects. However, out of 101 projects implemented/ being implemented during the review period, execution of 66 projects was delayed inordinately. After allowing a completion period of three years, the excess time taken was up to five years in 47 projects, between five to ten years in 4 projects and over 10 years in 15 projects.

The execution of the projects involved a cost overrun of ₹ 436.62 crore in respect of 39 projects. The cost overrun was up to 100 *per cent* in 24 projects, between 100 to 500 *per cent* in 10 projects and above 500 *per cent* in 5 projects.

The main reasons for time and cost overrun as analysed by us were as under:

- Shortage of finance/failure in arranging finance.
- Deficiencies in planning.

- Delays in awarding the work.
- Delays in execution of work.
- Deficiencies in managing disputes.
- Delays in completion of related transmission works.
- Absence of sufficient load for testing and commissioning.
- Unfavorable climate, terrain and natural calamities.
- Lack of effective control over the completion of various packages.
- Changes in design.
- Execution of additional items of work not envisaged in the DPR.

The audit findings relating to major instances of time and cost overrun are discussed below:

Delay in commissioning of Kitpi Hydel Power Project- Phase-II

5.2.24 Kitpi Hydel Power Project Phase II (2 x 1.5 MW) utilising the waters of Nemetrang/Kitpi Nallah was taken over by DOP in 1993. Subhash Projects and Marketing Ltd., Kolkata was awarded the contract (Civil and Electromechanical works) on a turnkey basis (March 1993) for a total cost of ₹ 18.33 crore. The estimated period of completion was 18 months. The turnkey contractor delayed the execution of the project and the contract ran into dispute (1995) for which arbitration proceedings were still continuing (May 2010).

The cost of the project was revised to ₹ 29.59 crore in 2002. The civil works of the project was resumed by the the department in 2004. The Electromechanical (E&M) works was awarded (September 2006) to a firm, Nortech Power Projects Ltd. (NPPL), Kolkata for ₹ 10.80 crore with the planned date of completion of April 2007. The project was delayed due to various factors and was actually commissioned in February 2009. The reasons included poor condition of the roads, natural calamities such as landslides, delays in receipt of drawings from AHEC, the consultant of the department and delays on part of the contractor in providing various data and specifications. There were also lapses on part of the Department as the works undertaken provided for only one 33 KV outgoing bay instead of two incoming and outgoing bays including synchronization arrangement of power supply from the adjacent Nuranang project. The work of creation of additional bays and synchronisation therefore had to be executed separately. As a result of the delays, the cost of the project escalated to Rs 33.82 crore in 2009 resulting in a total cost overrun of ₹ 15.49 crore (₹ 33.82 crore – ₹ 18.33 crore). In addition to this, there was time overrun of 172 months (from October 1994 to January 2009 causing a generation loss of 226.04 MU.

The department stated that the project was delayed on account of arbitration, non-availability of funds, natural calamities and the remoteness of the area. However, the

fact remains that the delays were also caused by lapses on part of the department and its consultant.

Delay in commissioning of Kambang MHS

5.2.25 The State Government accorded sanction (March 1994) for construction of the 3X2 MW Kambang project at an estimated cost of ₹ 10.73 crore, which was scheduled to be completed in three years. The project, initially commenced departmentally, was entrusted to NHPC (February 2001) as the project got delayed. However, agreement between the State Government and NHPC (January 2002) was entered into after the lapse of nearly one year. As per the agreement, the project was to be completed within two years from the date of handing over of the project site (March 2002). The total cost of the project was estimated at ₹ 43.59 crore, including expenditure of ₹ 11.17 crore already incurred by the Department.

NHPC awarded sub-contracts for the civil works of the project. The progress of the work was found to be sub-standard and behind schedule. The defects in work and the need for protection works at the intake area to prevent damages to the intake weir and feeder channel were brought to the notice of NHPC (January/February 2005) by the department. However, the floods which occurred in March 2005 badly damaged the desilting tank and CC-by-pass channel structure of the project. The flood damages delayed the project which was substantially complete by that time. After restoration works, the project was completed in November 2009 after a delay of 68 months (including the delay in executing the agreement). The cost incurred (March 2010) was ₹ 47.60 crore resulting in a cost overrun of ₹ 36.87crore.The enquiry into the matter by the State Government held (March 2005) NHPC responsible for the damages due to defective design and construction. However, the State Government could not claim compensation as the agreement did not contain any clause for imposition of penalty for delay in commissioning/sub-standard work/sub-letting of contract. Besides the cost overrun, the delay in commissioning the project caused loss of generation to the tune of 178.70 MU.

Improper estimation of discharge data

5.2.26 AHEC, the consultant prepared (February 1998) the detailed project report for the Halaipani Small Hydroelectric Project on the Hali river proposing installation of three units of 3 MW each. The project was taken up (November 2000) by NHPC on the request of the State Government. However, as the DPR prepared by AHEC was based on discharge data of three months only, NHPC requested detailed discharge data from the department. Based on the detailed discharge data for five years, the DOP requested (August 2001) NHPC to consider revision of the capacity to 12 MW. Accordingly, NHPC in its DPR revised (2002) the capacity to three units of 4 MW each. The work was sanctioned (February 2002) for execution at an estimated cost of ₹ 64.30 crore.

As a matter of policy, the State Government took back (February 2003) the project from NHPC, and approached AHEC for preparation of structural drawings in May

2004. Revised data relating to river bed level and flood level were furnished by the department to the consultant in May 2006, based on which the consultant revised (June 2006) the capacity of the project again from three units of 4 MW each to four units of 4 MW each. As a result, the specifications of various civil and electro mechanical works were changed. The work on the project was commenced from April 2006 and the expenditure incurred till January 2009 was ₹ 19.30 crore, Based on the revised specifications, the estimated cost was ₹ 112.41 crore.

Thus, due to the delays in furnishing accurate water discharge data by the department, the specification was changed two times after commencement of the work. The executing agencies were changed repeatedly. The progress in execution of the project was slow due to these reasons besides lack of funds. Consequently, the project sanctioned in 1997 and commenced in 2000 still remains at preliminary stage with completion of 30 *per cent* of the civil works and 1 *per cent* of the E & M works at a cost of ₹ 32.65 crore (June 2010). Based on the standard period of completion of three years the work should have been completed by November 2003. Based on the department's estimated date of completion of March 2012, the time over run would be 99 months (from December 2003) causing a minimum generation loss of 693.74 MU (August 2010).

The department stated that the change in design was based on technical parameters which were revised beneficially and did not contribute substantially to the delay. But the fact remains that the revised data was provided by the department only in May 2006, thereby delaying the project.

Creation of excess capacity

5.2.27 The contract for the completion of 2 x 1 MW project utilizing the waters of Domkhrong river sanctioned (March 1991) by the State Government was awarded (October 1993) to M/s Boving Fouress Ltd., Bangalore for a total cost of ₹ 12.43 crore. However, due to disputes relating to price variation, cost escalation etc., the contractor stopped work (April 1999) when the project was substantially completed (98 *per cent* of civil works and 100 *per cent* of electromechanical work) and raised a dispute which was referred for arbitration.

As the department sought a direction for the completion of the project, the arbitration tribunal directed (November 2002) the firm to resume and complete the work within six months of the department paying ₹ 50 lakh in cash and ₹ 1.50 crore as bank guarantee. The balance cost incurred on the project was payable on completion of the project. The department failed to act on the order, but implemented the same when given a second chance in the tribunal's final order (March 2006) after a delay of 39 months which caused a loss of generation of 34.16 MU.

Though the project after resumption was scheduled for completion by September 2006, the commissioning was delayed due to low discharge or non-availability of sufficient water for full load testing. The design discharge of water was based on observations carried out in January 1988 and the water discharge had decreased

thereafter, which was not ascertained by the department before commencing the project. The work has not been completed so far and the department has not taken over the project (June 2010) despite operation on trial basis from April 2009. The delay in commissioning the project caused a loss of generation of 26.28 MU bringing the total generation loss to 60.44 MU.

On account of the reduced discharge of water the chances of operating the project at full capacity is remote. Consequently, the expenditure incurred on the creation of excess capacity would be unfruitful.

The department stated that the project was designed with the concept of keeping one unit as standby and envisaged generation of one unit at a time only. The reply is not based on facts as this is neither stated in the DPR nor other documents related to the project.

Loss on reviving an abandoned project

5.2.28 The work of turnkey execution of the 2x1 MW HEP at Liromoba was awarded (June 1995) to Subhash Project and Marketing Ltd, Kolkata (SPML) at a cost of ₹ 18.15 crore with a completion period of eighteen months. However the progress in execution of the work was inadequate and the work remained largely incomplete after the lapse of nine years when the contractor terminated (June 2004) the work. As the project ran into disputes and arbitration, the handing over and taking over of E&M items and joint measurements were completed in January 2005. Despite the poor progress of work, the department did not take any action and allowed the firm to prolong the work for nine years till its termination by the latter. This caused idling of the machinery with resultant damages which necessitated additional expenditure of 1.43 crore to commission the project.

The department (March 2006) invited offers for repairs and renovation of machineries which were procured 10 years ago as all equipment suffered damages on account of improper and long period of storage. The work of repairing and commissioning the E & M equipments was awarded (August 2006) to Swamina International Private Limited (SIPL) at a cost of ₹ 1.43 crore with a period of three months for completion. The E & M work was completed by M/s SIPL and the two units were synchronized in January 2009. One of the reasons for the delay was the non-availability of the drawings and manuals for electromechanical equipments. As the governors are functioning in manual mode only the Department has not taken over the project so far. Thus, there has been a delay of about two years in the execution of the project after its revival in August 2006 causing a loss of generation of 21.02 MU.

As on April 2010, the maximum load available in the distribution area of the project was less than one third of its capacity as necessary arrangements for transmission of excess power to needy areas has not been completed.

The department stated that the amount spent of ₹ 1.43 crore cannot be considered as extra expenditure as the works have been executed at the risk and cost of the SPML.

The reply is not logical as the firm had already obtained arbitration awards in its favour.

Improper planning and failure in arranging finance

5.2.29 For the 50 KW capacity project at Jigaon, West Kameng sanctioned in December 2005, the Department prepared a project report for a total estimated cost of ₹ 71.85 lakh and submitted the same to MNRE for funding. Subsequently, the department revised the capacity to 2x100 KW to make full utilisation of the water discharge available and sent a proposal for funding the project with the revised capacity to the Science and Technology (S&T) department of the State. The S & T department failed to fund the project. In the meantime, the project was sanctioned for funding at 50 KW as proposed by MNRE and the execution of the project was commenced in February 2009. The work on the project was stopped due to paucity of funds (March 2010) when it was completed to the extent of 33 *per cent* only with financial progress of ₹ 0.14 crore.

We observed that the planning of the project was faulty from the beginning. Though the capacity of the project was confirmed as 2 x 100 KW, the change in capacity was not brought to the notice of MNRE resulting in the sanction of funding for the project for 50 KW. There were lapses in arranging the finance for the project also as the department failed to include the project under PM's package.

The department has stated the project was undertaken in accordance with the original proposal of 50 KW, on the basis of which MNRE had sanctioned funds for the project. We are of the view that the execution of the project with reduced capacity will cause huge losses in the long run at 0.79 MU per annum.

5.2.30 Setting up of project without proper feasibility study

- The DPR for construction of the 2X250 KW Dusnallah small hydro project at an estimated cost of ₹ 4.05 crore was approved (November 2001) after conducting a limited feasibility study. In July 2004, when the works were at an advanced stage after incurring ₹ 4.14 crore, the entire project except turbines worth ₹ 1.62 crore was washed away by heavy floods. The department did not revive the project due to uncertainty over the stability of the area and the expenditure of ₹ 2.52 crore on civil works was written off (July 2008).

We observed that the department had not made adequate geological studies and risk assessment for floods in the disaster prone area before starting the work on the project. The department also admitted that the study conducted was inadequate. The Chief Engineer declined to revive the project on account of the doubts regarding viability of the project. Had proper geological studies been done and these risks been assessed initially, the loss could have been avoided.

5.2.31 Underutilisation/idling of projects due to failure in arranging transmission net work

- The commissioning tests of the 2 x 1000 KW Rina project were run successfully during early March 2009 under available load of up to 418 KW but full load testing could not be done due to the absence of T&D lines. The project was conditionally taken over by the Department from the turnkey contractor in March 2010. As stated by the department, the DOP is constructing the required transmission facility for facilitating better utilisation of the generation. The operation at less than one-fourth of the capacity will cause huge loss of generation

- The 2x1.5 MW Pacha MHP was ready for operation from January 2009, but was not operated till August 2009 due to coordination problem with DOP as the T & D arrangements were not made. The generation after commissioning was limited to 900 KW due to lower capacity of the 630 KVA transformer/non-availability of transmission lines. The full load testing has not been done so far (August 2010) as the required transmission line from Seppa to Bomdila for evacuation of power has not been completed.

- There was underutilisation of power after commissioning of three projects of 2 x 50 KW capacity (Thingbu, Shakti, Bramdongchung), one project of 1 x 50 KW capacity (Koye) and three projects of 1 x 30 KW capacity (Chellankung phase II, Ankaling and Chambang) due to non-completion of the related transmission facility.

Contract Management

5.2.32 Contract management is the process of efficiently managing contracts (including inviting bids and award of work) and execution of work in an effective and economic manner. The works are generally awarded on turnkey (composite) basis to a single party involving civil construction, supplies of machines and ancillary works. The agreements related to civil works, supply of equipments and other miscellaneous works. Instances of lapses in dealing with disputes and legal proceedings, noticed by us are given below:

Lapses in dealing with disputes

5.2.33 The department awarded contracts relating to turnkey execution of six projects[†] to Subhash Project and Marketing Ltd, Kolkota (SPML) and three projects[‡] to Boving Fouress Limited, Bangalore (BFL) in the year 1993. Disputes were raised by both the firms which are pending (June 2010) after the lapse of seventeen years. Six[§] of the nine projects mentioned above remained incomplete (March 2010).

- There was failure in precise estimation of works awarded by the department in all the cases. Instead of adopting a practical approach, the department refused to

[†] Nuranang, Kipti, Mukto, Sipit, Sidip, Liromoba.
[‡] Sirnyuk, Domkhrong, Kush.
[§] Mukto,Sipit,Sidip,Sirnyuk, Domkhrong, Kush.

compensate the firms for extra work and price variation on the plea that the contracts were awarded on turnkey basis. It could be seen that in the case of Rina project awarded to another contractor, where the disputes were of a similar nature, the department adopted a practical approach and awarded price variation though the contract did not provide for the same. This resulted in prolonged arbitration cases which dragged on for long periods. The department could have avoided the long delays and long periods of abandonment for the projects if the matter could have been settled without prolonged disputes. On the matter being referred for arbitration, the department took over the projects after abandoning them for long periods. The idling of the projects caused damages to the works executed and cost escalation. The pendency of disputes did not preclude the department from executing the projects through other contractors. Instead of letting the projects lie idle for several years, the department should have completed the projects

The department replied that the Work Advisory Board of the Government did not approve the inclusion of price variation clause in the tender. The reply lacks justification as in the case of Rina project, the department had allowed price variation though the agreement did not provide for the same.

5.2.34 Lapses in conducting legal proceedings

In the legal proceedings following the disputes raised by SPML and BFL, the department committed several lapses as detailed below:

- BFL which was awarded the 2 x 1000 KW Kush project procured the E&M equipments before commencing the civil works despite being advised by the department not to do so. The firm had supplied the E& M equipment worth ₹ 8.46 crore at a Government godown at Lilabari, Assam 235 km away from the project site between December 1994 to March 1997, as the site store was not ready. The entire amount was paid by DOP, which was then executing the project. The firm abandoned the project (April 1999) on account of disputes. The Tribunal held that since the firm had abandoned the project after procuring the equipment, it was in breach of contract. However, the Tribunal also held that since no prayer was made by the department to direct the firm to take back the equipments supplied and refund the money, it could not give a similar direction to the firm. The lapse of the department in praying for its basic rights in the arbitration petition points to gross negligence and lacked justification.

  Though the department received legal opinion (April 2006) suggesting limited challenge of the arbitration award under section 34 of the Arbitration and Conciliation Act, 1996 against the failure of the tribunal to direct the firm to take back the equipment and order refund of the amount paid, it did not appeal within time and the award became a decree. Inspections conducted by the department in September 2008/April 2010 revealed that the entire equipment had become useless as it had been lying in the open exposed to weather outside the store building. Trees and bushes have grown around the equipment and it

was difficult even to locate it. Thus, the entire investment of ₹ 8.46 crore had become a total loss.

As the department had paid for the equipment and left the same in the custody of BFL merely on account of the site not being ready, it should have taken possession of the same when the firm abandoned the works in 1999. The conduct of the department reflects gross negligence in safeguarding its investment. Though the department intimated BFL (February 2009) that the equipment was in their custody based on the letter issued by the firm's then Manager in March 1996, the chances of recovering the cost of equipment appears remote.

The department's reply that it is awaiting legal advice on the issues of non-award of interest on the mobilisation advance and poor safe keeping of equipment by the firm is not tenable as several years have passed since the judgement.

- In the arbitration proceedings following the dispute, the department was awarded refund of the unutilized mobilization advance of ₹ 1.92 crore for civil works and interest thereon from January 2000. However, no interest was allowed from the year of payment of 1994 till December 1999. The department did not file any claim against the non-award of interest and suffered a minimum loss of interest of ₹ 0.76 crore (computed @ 8 *per cent* for the period of five years from 1995 to 1999).

- The losses sustained by the Department in the form of loss of generation from the projects on account of delay in commissioning and the resultant loss on account of extra expenditure on use of costly alternate fuel for generation (diesel) were disallowed by the Tribunals in both the arbitration cases as the department could not prove the losses. The department's failure to prove these actual losses reflect poor conduct of legal proceedings,

Operational Performance

5.2.35 Operations of the Department are dependent on input efficiency of materials and manpower and output efficiency in connection with Plant Load Factor, plant availability, capacity utilization, outages and auxiliary consumption. These aspects have been discussed later with other aspects affecting the efficiency of the organization.

Manpower Management

5.2.36 The departments have not been unbundled into companies and the staff requirements have not been assessed by the CEA. The position of actual manpower, sanctioned strength & manpower as per CEA recommendation is given below:

(Rupees in lakh)

Sl. No.	Particulars.	2005-06	2006-07	2007-08	2008-09	2009-10
1	Sanctioned strength	191	333	334	335	412
2	Actual manpower (including casual and work charged staff)	NA	NA	2543	2915	3070
3	Expenditure on salaries (₹ in crore)	2.37	3.37	3.38	4.45	4.90

It would be seen from the above that manpower in position was higher than sanctioned strength. However, the excess deployment of staff was on account of the operation of numerous small projects. As a result, the department does not have adequate staff and faces shortage of operation and maintenance staff especially in the electromechanical wing. The daily operations in many of the micro hydel stations are therefore carried out through untrained/temporary staff. Though the department has initiated the process of assessing the staff requirements of various divisions, the same has not been brought to the notice of the State Government so far (June 2010).

Output Efficiency

5.2.37 Shortfall in generation

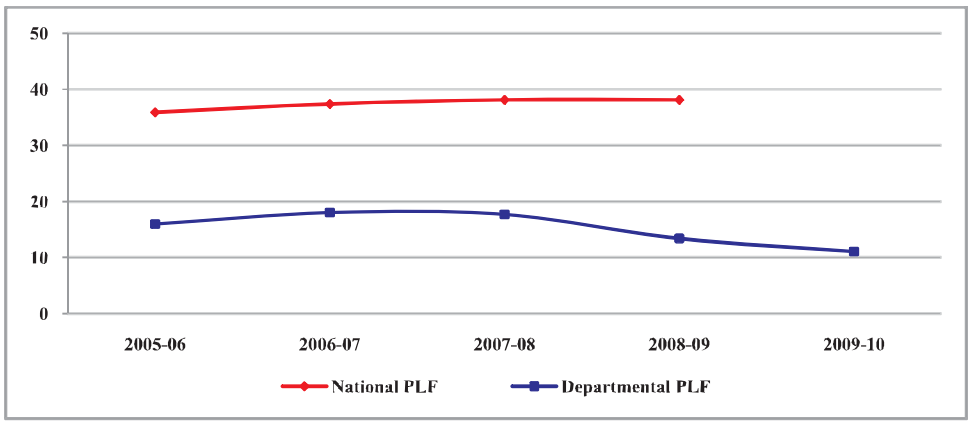
The targets for generation of power for each year are not fixed in the State. The targets fixed by the CEA relate to four projects only as it fixed targets for projects with capacity in excess of 3 MW. We observed that the State was able to generate a total of 269.66 MU of power during 2005-06 to 2009-2010 against the design capacity ranging from 505.10 to 721.74 MUs. This resulted in a net shortfall of 2578.66 MU as shown in the following table:

(Generation in MU)

Year	As per design capacity	Actual	Shortfall
2005-06	505.10	50.84	454.26
2006-07	505.10	55.52	449.58
2007-08	514.39	55.32	459.07
2008-09	601.99	53.09	548.90
2009-10	721.74	54.89	666.85
Total		**269.66**	**2578.66**

Low Plant Load Factor (PLF)

5.2.38 Plant load factor (PLF) refers to the ratio between the actual generation and the maximum possible generation at installed capacity. According to norms fixed by Central Electricity Regulatory Commission (CERC), the PLF for hydro power generating stations should be 80 *per cent,* against which the national average was 35.9 to 38.1 *per cent* during 2005-06 to 2009-10. The PLF achieved by the Department was 15.96, 18.00, 17.67, 13.39 and 11.04 *per cent* during the review period as indicated below:



As the PLF had been designed considering the availability of inputs, the loss of generation during the period 2005-2006 to 2009-2010 indicated that resources and capacity were not being utilised to the optimum level due to design deficiencies, frequent breakdown of units and delay in timely rectification of defects.

The details of actual generation vis-à-vis actual PLF achieved, National PLF, Generation at National PLF, and the difference of generation between actual generation and generation at National PLF are given in the following table:

Sl. No.	Description	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Actual Generation (in MUs)	45.67	51.51	52.21	51.29	55.52
2.	Actual PLF (*per cent*)	15.96	18.00	17.67	13.39	11.04
3.	National PLF (*Per cent*)	35.9	37.4	38.1	38.1	38.1
4.	Generation at National PLF (in MUs) = (1/2 x 3)	102.73	107.03	112.58	145.94	191.6
5.	Generation loss (in MUs) = (4-1)	57.06	55.52	60.37	94.65	136.08

It could be seen from the above table that the shortfall in generation as compared to national PLF, works out to 403.68 MU during 2005-06 to 2009-10. The main reasons for the low PLF, as observed in audit were:

- Low plant availability
- Low capacity utilisation
- Major shut downs and delays in repairs and maintenance
- Operation of small units which are not economically viable

Operation of non-viable units

5.2.39 As worked out by the department, the cost of generation has shown an increasing trend from ₹ 1.49 per unit in 2005-06 to ₹ 2.26 in 08-09 with marginal decrease to ₹ 2.13 in 09-10. However, the cost of generation was very high in some units rendering them unviable. The operational cost of these units was much higher than the average revenue realisation per unit of ₹ 2.50. The loss incurred in the operation of these units was ₹ 10.27 crore.

Though, it was decided in the co-ordination meeting(November 2009) between both the departments (DHPD & DOP) to decommission economically unviable units of power stations with low PLF, no action has been taken in this regard (June 2010).

Low plant availability

5.2.40 Plant availability means the ratio of actual hours operated to maximum possible hours available during certain period.

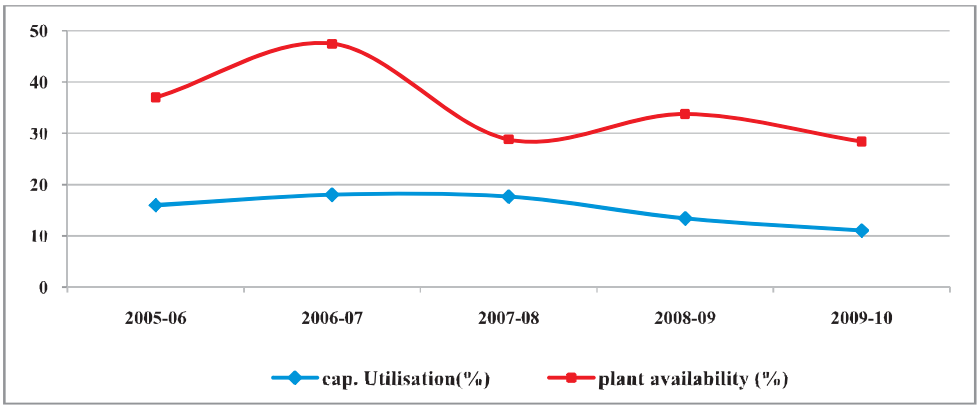
The details of total hours available, total hours operated, planned outages, forced outages and overall plant availability in respect of the State as a whole are shown below (as analyzed for 43 units):

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Total hours available	249270	859190	879700	879702	791816
2.	Operated hours	92191	279668	253377	296916	224875
3.	Planned outages (in hours)	3838	37214	37556	32493	31126
4.	Forced outages (in hours)	153241	542308	588767	550293	535815
5.	Plant availability (*per cent*)	36.98	47.47	28.80	33.75	28.40

The low availability of Power plants was due to longer duration of forced outages caused by inordinate delays in repair and maintenance and non-availability of water discharge.

Low Capacity Utilisation

5.2.41 Capacity utilisation means the ratio of actual generation to possible generation during actual hours of operation. Based on the norm of the CEA, the standard capacity utilisation factor works out to 60 *per cent* for power plants. However, audit analysis revealed that capacity utilisation achieved was 15.96, 18.00, 17.67, 13.39 and 11.04 *per cent* during the review period as given below:



The main reasons for the low utilisation of available capacity during 2005-10, as analysed in audit were:-

- Running of units with partial load/without load;
- Reduced capacity of old generating unit; and
- Constraints on transmission capacity

Generation from Diesel and resultant losses

5.2.42 The State has 124 diesel generating station spread all over the State which are operated by the DOP. Though the installed capacity of all the diesel generating stations together is 25 MW, the actual generation has come down over the years on account of expansion of hydel generating capacity and increase in availability of electricity from the central sector projects. The present generation of only 2.59 MW (2009-10) is mainly utilised as a standby source for major institutions and power supply to VIPs. The cost of generation of power from diesel is much higher at ₹ 13.69 (08-09) per unit compared to the cost of hydel generation of ₹ 2.13 per unit. Thus, on account of non development of hydro generation capacity/failure to extend transmission of central generation, the department has incurred huge losses on account of diesel generation which amounted to ₹ 7.05 crore for the years 2008-09 and 2009-10.

Outages

5.2.43 Outages refer to the period for which the plant remained closed for attending planned/ forced maintenance. Audit observed following deficiencies in planned and forced outages:

- The total number of hours lost due to planned outages increased from 3838 hours in 2005-06 to 31126 hours in 2009-10, i.e., from 1.54 *percent* to 3.93 *percent* of total available hours in the respective years.
- The forced outages in power stations increased from 153241 hours in 2005-06 to 535815 hours in 2009-10, i.e., from 61.48 *percent* to 67.67 *percent* of total available hours in the respective years.

Major Project specific outages

5.2.44 The major instances of outages in respect of specific projects noticed by us are as follows:

- In the case of Rahung MHP (3 x 250 KW), one unit was shutdown from April 1997 till date. Presently, R & M of the units are in progress. The department's reply that one unit at the station was designed as standby does not justify the failure to repair the unit for 13 years. Further, there is loss of generation as all the units can be operated in the summer/monsoon months on account of availability of excess water. The loss of generation from this unit from April 1997 to June 2010 amounted to 17.41 MU.
- The third unit of the Tago Project (3x1500 KW) failed in July 2000 on account of flood and problems with the metro seal resistor in the excitation panel. This unit is proposed (March 2010) for renovation and modernization along with the other two units of the Hydel Station now after the lapse of nearly ten years. The failure to repair a unit with such a high capacity for nearly 10 years lacked justification. The loss of generation from December 2000 to June 2010 for 115 months was 75.5 MU.

- The unit I of Tago Hydel Project was under shut down from January 2010 due to burning of the control panel on account of non-synchronization with the grid voltage. The burning of the panel indicates that the protective devices of the panel to cut off the power supply in the event of failure in synchronization did not operate effectively, which indicated poor maintenance. The work has not been taken up so far (June 2010). There was a loss of generation for six months from January to June 2010 amounting to 3.94 MU.

  The department stated that it faced problems in repairing the units on account of the indifferent attitude of BHEL, the manufacturer of the turbines. There was difficulty in obtaining the spares as BHEL had discontinued the production of small machines. The department also admitted that on account of fund constraints, it could not affect proper maintenance which caused the failure of the protective devices and the burning of the control panel.

- The units I and IV of the Mai Phase I (4x500KW) project were not in operation since 2000 due to problems related to the alternator and the machine foundation. The unit II is also not in operation since February 2008 due to problems related to the alternator. The units have not been repaired so far (June 2010). The failure to repair the three units for such long periods (114 months for units I &IV and 29 months for unit II) lacked justification and have caused loss of generation of 56.28 MU.

- One unit of the Sessa project (3x500KW) at Balukpong remained shutdown from August 2002 due to mechanical defects. The loss of generation upto June 2010 amounted to 20.81 MU. The department's reply that the load demand at Balukpong is only 1000 KW is not logical as the excess power could have been transmitted to needy areas.

- The Dulom project (4x100 KW) project remained shut down from 2008 due to damage of small portion of the power channel. The failure of the department to rectify the damages and commission the unit for more than a year is not justifiable. The loss of generation for the period from January 2009 to June 2010 was 3.15 MU.

  The department stated the delay in repair was due to shortage of funds. The reply is not tenable as the funds position of the department had improved considerably from the year 2008 on account of the PM's package under which it received huge funds which would have enabled use of other funds for the work.

Auxiliary consumption of power

5.2.45 Energy consumed by the power stations themselves for running their equipments and common services is called Auxiliary Consumption. CERC allowed 0.50 percent of the power generated to be used as auxiliary consumption. However, the actual auxiliary consumption of power stations increased from 2.27 *per cent* in 2005-06 to 2.74 *per cent* in 2009-10 resulting in excess consumption of 6.45 MU valuing ₹ 1.29 crore which could not be dispatched to the grid.

Repairs & Maintenance

5.2.46 As reported by the department to the CEA (2008), no advance maintenance schedule is prepared. Instead maintenance is done as and when the necessity arises. To ensure long term sustainable levels of performance, it is important to prepare maintenance schedules and adhere to them. The efficiency and availability of equipment is dependent on the strict adherence to maintenance and equipment overhauling schedules. Non-preparation of a schedule of maintenance carries a risk of forced outages. These factors lead to increase in the cost of power generation due to reduced availability of equipments which affect the total power generated.

Renovation & Modernisation

5.2.47 R&M activities are aimed at overcoming problems in operating units caused due to generic defects, design deficiencies and ageing by re-equipping, modifying, augmenting them with latest technology/systems. Refurbishment activities are aimed at extending economic life of projects.

Many of the Micro Hydel projects in the State have already outlived their normal life requiring total renovation and technology change. The plant load factor of these Hydel Projects is as low as 14.61 *per cent* on account of operation with obsolete electromechanical equipments due to lack of funding for renovation and modernization. Twenty-nine Micro Hydel Stations of the Department required renovation and modernization involving a total outlay of ₹ 36 crore. The renovation works have been completed in respect of Kipti-I, Anini and Deopani projects during December 2009, January 2009 and March 2009 respectively. The works are in progress in respect of Along, Yembung, Sikut, Tirthaju, Rahung, Mai-Ph I, Tissue and Charju projects though the due dates for completion of the works have been over (June 2010). The works at Along was due for completion by July 2007 and the delay has exceeded 34 months. For the other seven works in progress, the delay ranged from four to seven months (June 2010).

The Department is pursuing the matter with GOI since 2007 for arranging funds for the projects through PM's package/ MNRE. As the Department does not have the expertise to prepare the feasibility reports for the work of modernization, the work was outsourced and awarded to Alternate Hydro Energy Centre (AHEC), Indian Institute of Technology, Roorkee for 27 of these projects. The project reports are under preparation by AHEC (March 2010).

In the case of three units (Kipti-I, Dirang and Rahung Projects commissioned in the years 1977, 1977-78 and 1972-73), the department prefered the option of repairing the machineries. The repairs do not have the guarantee of enhanced life which would be given by the replacement option.

Unfruitful R & M works

5.2.48 The 3X500 KW Kitpi Phase-I Project over the river Namethrang was commissioned in 1977 with 11 KV transmission facility. As overall repairs and

maintenance were necessitated after the lapse of 27 years, the department entrusted the work of preparation of project report for the R& M works to AHEC. As per the project reports (January 2004), the centre offered two alternatives for the work. While one alternative was for extensive repairs, the second alternative was replacement of major machinery (turbine and generators and governing system). The department prepared (2006) an estimate for ₹ 4.73 crore which recommended the option of repairs only. The civil work was started in the year 2006, and the contract for E & M works was awarded to a private firm (March 2006) and was completed (July 2009)after several delays.

The average annual generation obtained from the project prior to R & M works was 2.54 MU. The average annual generation after completion of R & M works based on generation from August 2009 to March 2010 was 1.81 MU. This revealed that after the repairs, the project failed to generate even the annual average generation before the R& M works. One of the reasons for the reduced generation was the absence of an adequate 33 KV transmission facility.

The department stated that it has initiated action for transmission of power through 33 KV and the generation will improve after completion of the transmission facility.

Operation &Maintenance

5.2.49 The operation and maintenance (O&E) cost includes expenditure on the employees, repair & maintenance including stores and consumables, consumption of capital spares not forming part of capital cost, security expenses, administrative expenses etc., of the generating stations but exclude the expenditure on fuel.

In respect of Hydro generating power stations, O&M expenses per MW for 2009-10 was fixed at Rs 38.45 lakh. Against the above mentioned norms the total O&M cost per MW incurred by the Department was ₹ 13.16 crore ₹ 15.26.00 crore, ₹ 16.04 crore, ₹ 31.03 crore and ₹ 39.81crore from 2005-06 to 2009-10. Audit observed that O&M expenses were higher than the norms fixed by CERC by ₹ 37.70 crore for the period from 2005-06 to 2009-10.

Financial Management

5.2.50 Efficient fund management is the need of the hour in any organisation. This also serves as a tool for decision making, for optimum utilisation of available resources and borrowings at favourable terms at appropriate time. The funds received by the department were mainly utilised to meet payment of power purchase bills, employee and administrative costs, and works of capital and revenue nature. As the main sources of funds were fund allocation by the State Government and subsidies from State/Central Governments and loans arranged by the State Government, the department's role in financial management of actual funds are limited.

Funding

5.2.51 The department's financial requirements are entirely met through funds allotted by the State. Revenue earned by the departments are therefore deposited to

the Government Account. The State Government fixes the outlays for spending by the departments at the beginning of the year and the sources from which the funds are to be arranged. The sources for funds include various types of grants by the GOI and the State Government and loans. While the fund allocations from the GOI are received from the State Government, other sources from the GOI comprise of the Prime Minister's package and the grants from MNRE. The loans and other sources of finance are pursued by the State Government which arranges the procurement and repayment of funds.

Prime Minister's package

5.2.52 In the package announced by Prime Minister of India, in January 2008, ₹ 550.00 crore has been earmarked for the power sector in the State, which was to be spent to achieve the ultimate goal of electrification of all households in the State. Of the total amount, ₹ 416 crore was allocated to the department for completion of certain existing incomplete schemes and construction of new small /mini/micro hydel stations, ₹ 86 crore to DOP for evacuation of power generated from small/mini/micro hydel stations constructed by the department and ₹ 48 crore to APEDA for construction of micro hydel stations and providing power through solar photo voltaic system in inaccessible areas. The projects under the package have been developed into three categories namely A, B, and C, against which ₹ 237.46 crore was spent as on March 2010.

Non-payment of development expenditure by NEEPCO

5.2.53 Though as per the MOA for execution of the Kameng project, NEEPCO was also to undertake the execution of the 3 x 2.50 MW Khangten and 3x 1 MW Kipti phase II projects on BOT basis bearing all the expenses including those already incurred by the State. However, NEEPCO did not execute these projects. A subsequent understanding (September 2005) that NEEPCO would execute the 3 x 2000 KW Mukto project utilising its own funds in lieu of the Kipti II project, and would reimburse the department the expenditure of ₹ 1.90 crore incurred for the Khangten project, has also not materialised (June 2010). While Kipti II was subsequently executed by the department, Khangten project has now been awarded to another developer. The Mukto Project is being executed by the department utilising its own funds and the expenses incurred by the department (June 2010) amounting to ₹ 40.91crore have not been claimed from NEEPCO.

Being Central Government companies upfront fee was not collected for the four projects awarded to NHPC and NEEPCO. However, in lieu of upfront fee for one project, NHPC has committed a contribution of ₹ 27 crore for infrastructure development of the State in the case of one project and has paid a 9 *per cent* interest bearing advance (adjustable against free power) of ₹ 225 crore for the three other projects. However, no such condition has been incorporated in the MOAs with NEEPCO. The failure to negotiate the matter with NEEPCO has caused a loss of ₹ 27 crore besides the use of funds receivable as advances.

Claims and Dues

5.2.54 The DOP sells the energy produced by the department and the energy purchased, to consumers within the State and to bulk purchasers outside. Generally the sale prices do not cover the total input costs. The differential amount is absorbed by the Government as the department does not generate any income of its own. As the department does not earn any return on the power generated, there is no incentive to boost generation.

The efficiency of revenue collection by the DOP was poor and as on March 2010, an amount of ₹ 53.85 crore was outstanding towards collection. The bulk of the dues pertained to Government institutions and departments.On the other hand, subsidies sanctioned by MNRE are still pending totaling to ₹ 19 crore in respect of five projects[**].

We observed that the amounts are pending on account of deviations from the MOU conditions relating to payments in the case of Kambang and Sippi project, transfer of fund requirements from MNRE to PM's Package and other reasons. MNRE has requested for details of actual spending with audit reports relating to the projects (September 2009) and details of interest accrued on the funds released for the projects. It may be noticed that the Jigaon project was stopped for want of funds after spending an amount of ₹ 13.56 lakh. The Department needs to take effective follow up action for the realization of the pending dues.

Tariff Fixation

5.2.55 The department has not been able to determine tariff through State Electricity regulatory Commission to recover Annual Revenue Requirement as SERC has not been formed in the State so far. Instead of matching the cost through an approved tariff, in the State, tariff revisions are made on an empirical basis by the State Government. The tariff revision of September 2006 provided for 5 *per cent* increase every year for the next three years which was not scientific. The Department needs to move from this level to a scientific fixation of tariff based on actual cost.

Monitoring by Top Management

5.2.56 The power department play an important role in the State economy. For such a giant organisation to succeed in operating economically, efficiently and effectively, there should be documented management systems of operations, service standards and targets. Further, there has to be a Management Information System (MIS) to report on achievement of targets and norms. The achievements need to be reviewed to address deficiencies and also to set targets for subsequent years. The targets should generally be such that their achievement would make an organisation self-reliant. Audit review of the system existing in this regard revealed the following:

[**] Sippi, Kambhang, Halaipani, Jigaon, Along (R&M

Though the CEA is responsible for overall monitoring and supervision of the power sector in the country, the monitoring by the agency of the Department's activities was very minimal as it monitored the performance of projects which had a capacity of 3 MW and above which are very few in the State. Consequently, many of the CEA norms are not applied in the State resulting in absence of control and monitoring mechanism. The online data entry prescribed by CEA is also not operated by the department. Thus, the monitoring by CEA is virtually absent.

Various internal monitoring and control mechanisms set up are not being implemented properly by the department. Though all E & M Divisions were required to submit generation and outage data in prescribed formats for the preceding month to zonal offices by 10th of each month, the reports were not sent in time or were sent in incomplete form by most divisions. The departments (DHPD and DOP) have also prescribed the procedure of Joint meter readings at a fixed time on the 1st day of every month for each hydel station. However, this is not being done in case of most of the generating units in the State.

The communication facilities in the hydel stations are very limited and modern means of communication are non-existent. The only means of communication is through telephones which in many cases are not accessible/ reliable in remote areas. The absence of a modern and efficient communication system pose a great risk and has caused collision of power supply in the Tawang region. As the Nuranang and Kipti II hydel stations in the region are adjacent, the power supply from both stations are synchronised first before being sent out for transmission. On 20th March, 2010, on account of failure of the telephone system, the power supply from Nuranang was charged without ascertaining operation of the Kipti project. As Kipti was already in operation, the unsynchronised simultaneous supply of power from both stations collided causing high voltage and current which overcame the protective systems of the DOP causing huge damages estimated at ₹ 0.22 crore. The distribution system broke down and could be restored only after eight days.

The department has stated that it proposes to install Digital Satellite Phone terminal in 51 remotely located hydel stations.

As per the decisions of the Govt. of India, there shall be Load Despatch Centres at the national, regional and State level (SLDC). The SLDC was to monitor the operations of the State Grid including live monitoring of generation. The generating stations were to intimate targets in advance and adjust generation with requirements as per its requirements. The SLDC of the Department did not have proper facilities such as internet, VSAT connectivity, SCADA system etc resulting in a largely unmonitored operation of the system.

Absence of a State Regulatory Commission

5.2.57 In terms of the Electricity Act 2003, State Electricity Regulatory Commissions are to be set up for the functions of promoting generation of electricity by providing suitable measures for fixation of the tariff for generation, supply, and

transmission of electricity. The regulatory commission is also given the mandate to advise the State Government on promotion of competition, efficiency and economy of activities in the industry. The State has not set up a regulatory commission so far and the tariff fixation for distribution is determined by the State Government itself. As the State is setting up major units for power generation with the participation of independent power producers in the private sector and the Central Power Sector companies, the State Government requires taking urgent steps to set up a Regulatory Commission.

Environmental Issues

5.2.58 The Lower Subansiri project under execution by NHPC and some of the projects proposed to be executed through IPP/private developers has raised various environment related issues. These include increase in risks for earthquakes on account of the State being located in a risky seismic zone, submergence of forest land including tiger reserves and bird sanctuaries, submergence of agricultural land located in the projects areas, change of course/ alteration/ reduction of flow of water in the downstream of rivers and consequent reduction in fertility of land etc. Various organisations and media have raised protests against the setting up of these projects on these grounds. The State Government therefore needs to adopt a transparent policy regarding the implementation of the projects on environment by studying/ disclosing the full impact of the projects and finding solutions to the problems.

Conclusion

- The department followed the approach of taking up and executing small and micro projects only though the State had vast capacity for generation of hydro power.
- The department failed to meet the growth in peak demand by 97.40 MW, as the capacity addition was only 24.73 MW against the additional capacity requirement of 122.13MW during 2005-10.
- Inordinate delays in execution of projects caused loss of generation and cost overrun.
- During project implementation the department committed grave lapses in dealing with disputes and legal matters.
- Underutilisation/idling of projects was also on account of lack of coordination with the Department of power.
- Against 33 units due for being taken up for Renovation and Modernisation/ Life extension programmes, only 11 units were actually taken after long delays.
- The PLF achieved by the department was much below the national average resulting in gross underutilisation of capacity to the extent of 403.68 MU resulting in procurement of central sector power at higher cost.

- The level of forced outages was very high and there were long delays in repairing projects which went out of order.
- The process of corporatization of power utilities and setting up of a State Regulatory Commission as envisaged in the Electricity Act 2003 has not been initiated.

Recommendations

The department must

- Intensify its capacity addition programmes to exploit the huge unexploited hydropower potential of the State by close monitoring so as to meet the national objective of power for all by the year 2012.
- Formulate a long term plan for ensuring funding of projects and renovation activities
- Improve coordination with the department of power to ensure development of transmission facility in line with the development of generation capacity.
- Evolve an appropriate mechanism for managing disputes and handling legal matters.
- Improve plant load factor and capacity utilization by controlling the forced outages.
- Carry out the scheduled maintenance of its power stations and expedite the renovation & modernization of the power projects which have exceeded their life span.
- Pursue the conversion of the present department into a corporate entity.

SECTION 'B' PARAGRAPHS

DEPARTMENT OF POWER

5.3. Avoidable payment of compensation

Avoidable payment of compensation of ₹ 3.20 crore due to incorporation of an unfavorable clause in the agreement which was also contradictory to another clause.

The Department of Power, Government of Arunachal Pradesh (Department) entered into an agreement (December 2005) with M/s Global Energy Ltd (GEL), a private operator, for sale of surplus power of 50 MW @ ₹ 4.02 per KWH for peak hours and 45 MW @ ₹ 3.24 per KWH for off peak hours for the period from January 2006 to March 2006. The agreement was extended periodically up to September 2010. As per the Clause 2.3 of the agreement, the quantum of power supply was subject to the availability of surplus power after meeting the requirement of the Government of Arunachal Pradesh. Further, as per clause 3.2 of the agreement, in the event of non-supply or short supply of the confirmed capacity by the Department during the contract period, all charges incurred on account of open access and reservation of transmission capacity till the delivery point and beyond the delivery point to the extent of such non-supply or short supply, in accordance with the CERC (open access in inter-state transmission) regulations, shall be to the account of Department of Power.

On actual execution of the contract, the Department could not supply the contracted quantity on many occasions as the surplus power left after meeting its requirement was not enough. Resultantly, in accordance with clause 3.2 of the agreement, the private operator raised claims for compensation of losses caused by the failure of the Department to supply the contracted quantity. The compensation claims were made on account of open access charges paid by GEL for power not received from Department and for penalties actually levied by the customers of GEL for short supply of power.

The Department allowed (September 2007 & April 2008) the reimbursement of open access charges @ 12 paisa per unit amounting to ₹ 80.39 lakh (for the period from 10th October 2006 to 7th February 2007) and ₹ 209.03 lakh (for the period from November 2007 to February 2008). Besides, the Department also allowed reimbursement of penalty of ₹ 30.68 lakh (period 01.01.2006 to 30.04.2006) paid by GEL to their customer (Assam Electricity Board) for consequent short supply by GEL. Thus the total amount reimbursed to GEL worked out to ₹ 3.20 crore on account of open access charges (₹ 2.89 crore) and penalty (₹ 0.31 crore).

Our analysis revealed that under Clause 2.3 of the agreement, since the power to be sold was only after meeting Department's own requirements, the incorporation of a clause 3.2 making the State liable to compensate the losses for short supply of power, was not only contradictory to clause 2.3 of the contract but was also not in the interest of the Department. We further observed that this contradictory clause (clause 3.2) did not exist in the similar agreement entered into earlier (April 2004) by the Department for sale of power with another private operator (M/s. Adani Exports limited). On realising the mistake, Department unilaterally attempted to alter/delete the said clause 3.2 of the

Contract by issuing corrigendum (7 July 2007), which was not agreed to by GEL. However, the Department continued to renew the contract with GEL on same terms and conditions thereafter July 2007 and July 2008 though it was against the financial interests of the Department.

As regards the reimbursement of penalty paid by GEL to its customer (Assam Electricity Board), we observed that the Department allowed reimbursement of ₹ 0.31 crore out of the total penalty of ₹ 0.92 crore paid (January-April 2006) by GEL, though there was no enabling clause in the contract in this regard. Thus, Department incurred avoidable expenditure of ₹ 3.20 crore due to inclusion of a contradictory and unfavourable clause in the contract and reimbursement of penalty not covered as per terms of contract.

The Department should take proper care while finalising the terms & conditions of contract, and avoid impracticable commitments so that such losses are avoided in future.

The matter was reported (August 2010) to the Government; their reply had not been received (November 2010).

5.4. Irregular grant of rebate

Loss of ₹ 56.42 lakh due to continuation of rebate even when it was not permissible resulting into undue favour to a private party.

The Department of Power, Government of Arunachal Pradesh entered into an agreement (December 2005) with M/s. Global Energy Ltd (GEL), New Delhi for sale of surplus power of 50 MW at a cost of ₹4.02 per KWH for peak hours and 45 MW at a cost of ₹ 3.24 per KWH for off peak hours for the period from January 2006 to March 2006. The validity period of agreement was extended periodically up to September 2010. The terms of agreement relating to the payments stipulated that a rebate for prompt payment on billed amount would be allowed at 2 percent when the payments were received within 7 days from the presentation of weekly bills submitted through fax. The system of weekly billing was modified subsequently to monthly basis vide corrigendum issued on 15th July 2009 by the department as it was not able to prepare bills on weekly basis.

We observed that the Department continued to allow the rebate for prompt payment at the rate of 2 per cent even on the payments received after the due dates of bill, which normally was fixed after allowing one month period from the date of issue of bill. We noticed that Department extended undue favour of ₹ 56.42 lakh to GEL by irregularly allowing prompt payment rebate during August 2007 to November 2009 as detailed below:

(Rupees in lakh)

Month billed	Bill Date	Due date	Payment received on	Billed Amount	Rebate allowed
6/07	14/7/2007	1/8/2007	24/8/2007	752.73	15.05
6/08	2/7/2008	1/8/2008	12/8/2008	1213.90	24.28
6/09	3/7/2009	3/8/2009	19/8/2009	166.23	3.32
8/09	2/9/2009	2/10/2009	5/10/2009	550.84	11.02
9/09	1/10/2009	1/11/2009	12/11/2009	137.37	2.75
Total				**2821.07**	**56.42**

We observed that the very purpose of allowing prompt payment rebate was to improve the liquidity position of the Department by attracting the customer to promptly pay electricity dues. As such, allowing of this rebate against the payments made by the customer after the due date of one month from the date of issue of bill was not justified and was against the financial interests of the Department.

Thus the department suffered a loss of ₹ 56.42 lakh on account of allowing prompt payment rebate to GEL which was irregular and not permissible in terms of the agreement.

The matter was reported (December 2010) to the Government; their reply had not been received (December 2010)

5.5. Undue favour to a private party

Undue favour of ₹ 9.36 crore to a private party due to Cabinet's unjustified decision for payment of claims outside the contract purview.

The Department of Power (Department) awarded (March 1995) the works of construction of 132 KV Single Circuit Transmission Lines from Tenga to Jang in Tawang-West Kameng districts (Tenga work) and from Deomali to Namsai in Tirap-Lohit districts (Namsai work) at costs of ₹ 35 crore and ₹ 45 crore respectively to M/s.Horizon Hi- Tech Engicon(P) Limited, Kolkota (firm). The works were commenced and amounts of ₹ 17.68 crore and ₹ 15.75 crore were paid for the works in Tenga and Namsai respectively by November 1998. However for want of funds, the settlement of further bills on these contracts could not be made by the Department and the contractor abandoned the works. This led to the matter being referred for arbitration by the firm.

Pending settlement of the arbitration case, the Cabinet in their meeting held on 10-02-09 formed (March 2009) a Committee chaired by the Chief Secretary and Commissioner (Finance), Secretary (Power), and senior officers of Power Department as other members to explore the possibility for an out-of-court settlement with the firm. The Committee determined (May 2009) that the value of the total work executed as ₹ 25.27 crore for the Tenga and ₹ 18.81 crore for Namsai. After adjusting the payments already made, the Committee recommended total payment of ₹ 10.64 crore (₹ 7.59 crore for the Tenga work and ₹ 3.05 crore for the Namsai work) to the firm.

The Cabinet after considering (August 2009) the recommendations of the Committee decided to pay the firm a further amount of ₹ 3.00 crore for price variation and ₹ 6.36 crore for interest on late payment of the claims.

Our analysis revealed that the additional amount of ₹ 3.00 crore and ₹ 6.36 crore for price variation and interest on late payment of the claims respectively, awarded by the Cabinet was not justified. Both these claims pertained to non-work items and were duly considered by the Committee. However, while making the final recommendations, the Committee did not allow these items for payment to the firm. We observed that the Committee, which consisted of financial and technical experts as members, had decided for not allowing the said two claims after through examination and on the basis of expert opinion of its members. As such, decision of the Cabinet for allowing payment

of these two claims to the firm against the recommendations of the Committee lacked justification.

The Electrical Division, Tawang observed (October 2003) that the works done were in no way useful to the Department as these were carried out in a haphazard manner and not even a single km was completed in full shape. The Department failed to inform the fate of Namsai work in spite of our request.

Thus due to the unjustified decision by the cabinet in agreeing to pay additional amount of ₹ 3.00 crore for price variation and ₹ 6.36 crore as interest on late payment of the claims in spite of their being outside the purview of the contract, the firm was extended undue favour of ₹ 9.36 crores.

The matter was reported (August 2010) to the Government; their reply had not been received (December 2010).

DIRECTORATE OF SUPPLY AND TRANSPORT

5.6. Extra expenditure on head load transportation

Extra expenditure of ₹ 2.50 crore on head load transportation of essential ration commodities.

The Directorate, Supply & Transport (DST), Government of Arunachal Pradesh, Naharlagun, entered into an agreement (August 2002) with M/s Range Enterprises, Itanagar for transportation of Essential Ration Commodities (ERC) from office of Additional Director, Supply & Transport (ADST), Lilabari to Central Purchase Organisation (CPO) Centre, Pipsorang, at an all inclusive rate of ₹ 6795 per quintal. The rate of ₹ 6795/- included carriage by land route amounting to ₹ 450 per quintal for the entire road distance from North Lakhimpur to Tamen and head load rate of ₹ 45/- per quintal per km (PKM) for the distance of 141 Km from Tamen to CPO, Pipsorang fixed by Government.

On actual execution of the contract, 1518.35 quintals equivalent to 7100[□] head loads of 20 kg were transported (December 2003) by the contractors. The head load rate was revised (December 2003) and increased by 456 per cent from ₹ 45.00 per quintal PKM to ₹ 50.00 per 20 kg of head load PKM by the Government w.e.f. 01.04.2003. Accordingly, the contractor preferred bills @ ₹ 7050 per head load of 20 kg (₹ 50 x 141 km) equivalent to ₹ 35250.00 per quintal for 141 km amounting to ₹ 5.07 crore including carriage charge of ₹ 6.83 [††] lakh for land route. The Government sanctioned the payment for ₹ 5.07 crore on 31.12.2008.

Our scrutiny revealed serious systemic deficiencies in the fixation of porterage / head load rates. The Government had fixed (September 2003) a rate of ₹ 25.00 per head load per 20 kg PKM for carriage of PDS items for Directorate of Civil Supplies (DCS), another directorate of the State Government. Now instead of allotting this rate in DST as well, the Government revised (December 2003) after 3 months the rate for DST to ₹ 50 per head load of 20 kg PKM. Government in a roll back to its decision

[□] *The number of head loads and the rate per head load was as per the actual claims of the contractor. These two figures cannot be derived from the para.*

[††] *1518.35 quintals @ of ₹ 450.00 per quintal*