Chapter-4

Performance Audit

(Public Sector Undertakings)

CHAPTER – 4

PERFORMANCE AUDIT

POWER DEVELOPMENT DEPARTMENT

4.1 Jammu and Kashmir State Power Development Corporation Limited

Executive Summary

The Jammu and Kashmir State Power Development Corporation Limited (Company) is a wholly owned Government Company with main objective to plan, execute, operate and maintain all generating stations under State sector. An audit review of the performance for the period 2011-12 to 2015-16 brought out financial mismanagement and creation of avoidable liabilities. Some of the significant findings are the following:

Highlights

- **There was delay in receipt of plan funds and power dues of ₹2,808.04 crore were pending from the State Government resulting in dependence on loans from financial institutions and extra interest burden of ₹58.24 crore. Statutory liabilities on account of water usage charges and labour cess accumulated to ₹1,573.19 crore.**

(Paragraphs: 4.8.3, 4.8.4 and 4.8.6)

- **Failure of Company to provide requisite information to the Jammu and Kashmir State Electricity Regulatory Commission led to non-inclusion of income tax of ₹96.96 crore in tariff fixation. Due to non-achievement of design energy, the Company was not able to recover expenditure of ₹275.85 crore through tariff.**

(Paragraph: 4.8.7)

- **The Company failed to achieve status of Mega Power Project in respect of BHEP-II due to which benefit of ₹105.80 crore could not be availed.**

(Paragraph: 4.9)

- **The Company had not achieved design energy, except in BHEP-I, leading to loss of generation of 2,520 MUs during 2011-16. There was low Plant Load Factor ranging between 22 *per cent* and 29 *per cent,* low Plant Availability Factor between 64.34 *per cent* and 76.66 *per cent* and excess forced outages over Central Electricity Authority norms to the extent of 7,91,630 hours resulting in low power generation.**

(Paragraph: 4.10)

- **Delay in completion of Renovation, Modernisation and Uprating resulted in loss of generation of 33.85 MUs valuing ₹6.77 crore annually in CHEP-I. Delay in undertaking repairs and maintenance of Hydro Electric Projects led to loss of generation.**

(Paragraph: 4.11)

4.2 Introduction

As part of the power sector reforms and de-bundling process, the Jammu and Kashmir State Power Development Corporation Limited (Company) was incorporated in February 1995 under the Companies Act 1956. It is tasked with planning, execution, operation and maintenance of all generating stations including the power projects that existed at the time of creation of the Company. At the end of March 2016, the Company had 22 hydro electric generating projects (including Baglihar II) and two thermal electric generating stations with an installed capacity of 1,061.96 Mega Watts (MW) and 175 MW respectively.

The State has an estimated power potential of 20,000 MW out of which projects having capacity of 16,475 MW have been identified and 3,113.46 MW had been commissioned through 33 projects (State Sector[1]: 22; Central Sector[2]: Seven; Private Sector[3]: Four).

During 2011-12, the peak demand in the State stood at 2,500 MW of which 1,789 MW was available. The corresponding figure for 2015-16 was peak demand of 2,740 MW and availability of 2,158 MW leaving a deficit of 582 MW. In terms of Million Units (MUs) of energy, energy requirement during 2011-12 was 17,323 MUs against which restricted energy[4] availability was 11,091 MUs and the corresponding figures for 2015-16 stood at 18,200 MUs out of which 14,226 MUs was available leaving a deficit of 3,974 MUs.

4.3 Organizational Set up

The Management of the Company is vested with the Board of Directors (BoDs) with the Chairman as its head. The day to day operations are carried out by the Managing Director assisted by Executive Director (Civil), Executive Director (Electrical), Director Finance, Senior General Manager (Law), Company Secretary and Administrative Officer. The Company functions under the administrative control of the Jammu and Kashmir Power Development.

[1] Jammu and Kashmir State Power Development Corporation Limited
[2] National Hydel Power Projects Corporation Limited
[3] Small Hydro Power Projects under Independent Power Producers/Public Private Partnership
[4] Restricted energy refers to forced power cut/outage schedules per day 8 hours in winter and 10 hours in summer

4.4 Audit Objectives

A performance audit was undertaken of the functioning of the Company with a view to assessing whether the:

- financial management of the Company was economic, efficient and effective;
- Company had been able to meet the power requirements of the State;
- Company was able to plan and implement projects in a transparent manner, efficient and optimal manner;
- human resources requirement was realistic and utilized optimally; and
- internal control system in place was effective.

4.5 Scope and methodology of audit

The working of the Company for 2005-06 to 2009-10 was last reviewed in the Report of the Comptroller and Auditor General of India (CAG) for the State of Jammu and Kashmir for the year ended 31 March 2010. The review was partly discussed in the Committee on Public Undertakings.

This performance audit was conducted between December 2015 and April 2016 covering the period from 2011-12 to 2015-16. The audit examination included scrutiny of records at the Company's Head Office, six[5] out of its 22 generating stations (commissioned projects) and four[6] out of twelve under implementation projects. The audit objectives were explained to the Management in an entry conference held on 15th January 2016. The results of audit were discussed with the Managing Director of the Company in an exit conference held on 4th October 2016. The replies of the Management have been taken into account and suitably incorporated in the report.

4.6 Sources of audit criteria

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

- State Hydel Policies 2003 and 2011, J&K Water Resources (Regulation and Management) Act, 2010 and other relevant State/Central Statutes/Rules;
- Detailed Project Reports (DPRs) and contract documents;
- Agenda and minutes of meetings of the BoDs; and
- Guidelines of the Central Electricity Authority and the rules/regulation of the Jammu and Kashmir State Electricity Regulatory Commission (JKSERC).

[5] BHEP-I (Baglihar) (450 MW), LJHP (Baramulla) (105 MW), Chennani-I (Udhampur) (23.30 MW), SEWA-III (Basohli) (9 MW), Pahalgam (Srinagar) (4.5 MW) and Igo-mercilong (Leh) (3 MW)

[6] BHEP-II (450 MW), Lower Kalnai HEP (48 MW), Parnai HEP (37.50 MW) and Dah HEP (9 MW)

4.7 Planning

The first imperative in proper management of any power generation enterprise is an assessment of the power requirements of the State followed by marshalling of resources required for capacity addition to progressively meet this requirement and planning for execution of power projects.

There was no capacity addition in the State during the 10th Five Year Plan (FYP) period i.e. up to 2006-07. In the 11th FYP (2008-2012), the Baglihar Hydro Electric Project (BHEP)-I with 450 MW was added in 2008-09. During the 12th FYP (2012-17), 303.26 MW was added (Pahalgam HEP: 1.50 MW, Bhaderwah HEP: 0.5 MW, BHEP-II: 300 MW and Sanjak HEP: 1.26 MW) to the generation capacity in the State. The details of capacity addition made in the State Sector (Company) between 2011-12 and 2015-16 are given in **Table-4.1** below.

Table-4.1: Details of capacity addition

(Figures in MW)

Description	2011-12	2012-13	2013-14	2014-15	2015-16
Capacity at the beginning of the year	758.70	758.70	759.20	761.96	761.96
Additions planned by the State	-	1.50	-	450.00	-
Actual Additions : Company (Own)	-	0.50	2.76	-	300.00
Capacity at the end of the year (1 + 3)	758.70	759.20	761.96	761.96	1061.96
Shortfall in capacity addition (2 – 3)	(-)0.50	1.50	(-)1.50	450.00	(-)300.00
Peak demand	2500	2550	2600	2650	2740
Peak demand met	1789	1817	1991	2043	2158
Deficit	711	733	609	607	582

The gap between demand and supply persisted though it decreased from 711 MWs (2011-12) to 582 MWs (2015-16) mainly due to procurement of energy from CPSUs/Others.

The Company had not made any long term plan for implementation of power projects in the State. However, a road map for bridging the gap between demand and supply involving capacity addition of 9,036.55 MWs (58 projects)[7] by the end of 13th FYP was approved (February 2013) by the BoD of the Company.

[7] It comprised 6,130 MW (14 projects) under State Sector, 1,679 MW (five projects) under Central Sector, 850 MW (one project) under Large Independent Power Producer (IPP), 372.55 MW (37 projects) under Small IPP and 5 MW (one project) Geo Thermal project

4.8 Financial Management

4.8.1 Non-finalisation of annual accounts

The Company had finalised its accounts up to the year 2011-12 and accounts from 2012-13 were in arrears. Non-finalisation of accounts is fraught with the risk of financial errors and irregularities remaining undetected.

4.8.2 Financial Parameters

The financial parameters of the Company for 2011-12 to 2015-16 are given in **Table-4.2** below.

Table-4.2: Financial Parameters

S. No.	Particulars	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Total Generation (in 10 MUs)	386.33	396.70	377.62	397.88	403.03
2.	Revenue from Generation (₹ in crore)	1119.90	1109.20	992.29	1027.36	1041.58
3.	Average Realization per unit (2/1) (in ₹)	2.90	2.80	2.63	2.58	2.58
4.	Total Cost of Generation (₹ in crore)	722.76	713.11	638.33	593.83	680.15
5.	Average Cost of Generation per unit (4/1)	1.87	1.80	1.69	1.49	1.69
6.	Average Net Revenue per unit (in ₹) (3-5)	1.03	1.00	0.94	1.09	0.89
7.	Capital Work-in-Progress (₹ in crore)	1033.50	1582.86	2483.57	3581.55	1685.92
8.	Profit Before Tax and Prior Period Adjustment (₹ in crore)	124.95	227.72	268.33	309.12	216.23
9.	Percentage of Profit Before Tax and Prior Period Adjustment to Generation Revenue ($8/2^{X}100$)	11.16	20.53	27.04	30.09	20.76
10.	Net Profit (₹ in crore)	403.29	308.07	168.73	214.33	98.19
11.	Net Profit to Revenue from Generation (10/2) (percentage)	36.01	27.77	17	20.86	9.43
12.	Capital Employed[8] (₹ in crore)	8123.72	8391.95	9386.58	10232.27	10660.01
13.	Return[9] (₹ in crore)	630.63	492.89	341.03	348.90	279.69
14.	Return on Capital Employed (percentage)	7.76	5.87	3.63	3.41	2.62
15.	Debt[10] (₹ in crore)	1493.54	1535.46	1826.49	2292.73	2279.19
16.	Equity[11] (₹ in crore)	5841.05	6294.47	6591.37	6740.34	6897.06
17.	Debt/Equity Ratio (15/16)	0.26:1	0.24:1	0.28:1	0.34:1	0.33:1
18.	Net Worth (₹ in crore)	5841.05	6294.47	6591.37	6740.34	6897.06
19.	Working Capital (₹ in crore)	1641.31	1731.64	2194.17	2310.95	2631.11
20.	Current Ratio (Ratio of Current asset and Current liabilities)	3.85:1	3.53:1	5.38:1	5.85:1	6.66:1

(Source: Annual accounts of the Company)

8 Net Fixed Assets (Including WIP) + Working Capital
9 Profit + Interest of Borrowed Capital
10 Secured and unsecured Loans
11 Share capital + Share application money + Reserve and Surplus + Accumulated Profit

While revenue per unit of energy of the Company decreased from ₹2.90 (2011-12) to ₹2.58 (2015-16), the cost per unit decreased from ₹1.87 during 2011-12 to ₹1.49 during 2014-15 due to decrease in costs of borrowings, depreciation and administrative costs and again increased to ₹1.69 during 2015-16 due to increase in finance cost and depreciation. Net realization of revenue per unit stood at ₹1.03 in 2011-12 which gradually decreased to ₹0.89 in 2015-16 except during 2014-15 when it had increased to ₹1.09. While the capital employed increased from ₹8,123.72 crore in 2011-12 to ₹10,660.01 crore in 2015-16, the return on capital employed decreased over the period.

4.8.3 Fund Inflow

The position of funds received from the Government of India (GoI), the State Government and loans received from financial institutions (FIs) during 2011-12 to 2015-16 is given in **Table-4.3** below.

Table-4.3: Details of Funds and Loans Received

(₹ in crore)

Year	Funds received		Loan	Total
	GoI	State Government	Financial Institutions	
2011-12	3.09	416.50	-	419.59
2012-13	7.76	172.00	254.52	434.28
2013-14	3.54	223.58	566.67	793.79
2014-15	10.88	0	689.07	699.95
2015-16	7.34	3.94	265.81	277.09
Total	**32.61**	**816.02**	**1776.07**	**2624.70**

During 2011-12 to 2015-16, the Company received ₹32.61 crore from GoI which included subsidy received from the Ministry of New and Renewable Energy (MNRE) for release to Small Hydel Projects (SHPs) and ₹816.02 crore from the State Government. The loan of ₹1,776.07 crore from various FIs was for BHEP-II (₹1,667.40 crore), Hanu (₹31.19 crore), Dah (₹32.48 crore) and Lower Kalnai (₹45 crore) power projects. Further, during 2011-12 and 2012-13, the State Government allocated funds under planned outlay for BHEP-II, Lower Kalnai and Parnai HEPs of ₹487.79 crore, ₹149.84 crore and ₹142.21 crore respectively against which ₹223.58 crore, ₹6 crore and ₹40.64 crore respectively were received by the Company. As a result, the Company had to arrange funds from financial institutions for which interest of ₹58.24 crore was paid.

The Management stated (October 2016) that though the Company had approached the State Government a number of times for release of pending plan funds, the State Government had not released the funds which had adversely affected the financial health of the Company resulting in delay in execution of on-going projects.

4.8.4 Claims and Dues of Energy

The Company sells the energy generated from its power houses to the J&K Power Development Department (JKPDD) except power generated from BHEP-I where 50 *per cent* energy is sold to the Power Trading Corporation (PTC) to meet lender's requirements. The position of energy sold to the JKPDD and the PTC during the period 2011-12 to 2015-16 is given in **Table-4.4** below.

Table-4.4: Details of Energy Sold

(₹ in crore)

Year	JKPDD		PTC		Total	
	Bill raised	Amount received	Bill raised	Amount received	Bill raised	Amount received
2011-12	644.16	262.81	475.74	463.16	1119.90	725.97
2012-13	591.21	500.00	518.05	504.40	1109.25	1004.40
2013-14	482.72	0.00	509.57	499.79	992.30	499.79
2014-15	491.97	275.50	535.40	393.30	1027.37	668.80
2015-16	483.76	235.26	536.69	562.95	1020.44	798.21
Total	**2693.82**	**1273.57**	**2575.45**	**2423.60**	**5269.26**	**3697.17**

The Company received its dues from the PTC regularly. However, the JKPDD had not paid the dues regularly since 1999 and the pending dues accumulated to ₹2,808.04 crore as of March 2016. In view of the huge recoverable amount from the JKPDD, it was decided (February 2012, July 2012, February 2013 and June 2014) in the Budget Sub-Committee meetings and in the meetings of BoDs that the recoverable amount of ₹1,987.37 crore ending March 2014 be settled against Plan Funds and State Equity in the Company by the State Government.

The Management stated (October 2016) that the Company had rigorously pursued the matter with JKPDD for release of dues and for approval of setting off the receivables with Plan funds but the response was awaited.

Thus, while the Company's interest-bearing borrowings increased over time, dues of ₹2,808.04 crore remained pending as at the end of March 2016 from the JKPDD. This adversely impacted the Company as it had to avail loans from financial institutions at interest rates ranging between 9.75 *per cent* and 13.75 *per cent* to fund its financial needs.

4.8.5 Avoidable payment of interest

The Power Finance Corporation (PFC) sanctioned (May 2012) a loan of ₹1,679.23 crore to be availed by the Company as per its requirement for implementation of BHEP-II. The Company availed ₹1,172.74 crore between September 2012 and March 2016 out of which ₹413.25 crore was lifted without immediate requirement and parked in Fixed Deposit Receipts (FDRs) between September 2012 and July 2014 for periods ranging between six and 130 days. The Company earned (October 2012 to July 2014) interest of ₹4.18 crore on FDRs but paid interest of ₹6.74 crore to PFC during this period resulted in avoidable payment of interest of ₹2.56 crore.

The Management stated (March 2016) that as per terms of sanctions, the borrower was required to draw the entire amount of committed funds as per a stipulated schedule failing which the borrower had to pay commitment charges of 0.25 *per cent* per annum. It added (October 2016) that the Company availed of the loan from the bank only after expenditure has been incurred on the project and that the funds parked in the FDRs were on account of power sale proceeds.

The reply is not tenable as there is substantial difference between the rate of interest charged by PFC (12.25 *per cent*) and the rate of interest earned by the Company on FDRs (ranging between 4.75 and 10.20 *per cent*). Hence the loan funds should not have been availed unless there was expenditure that had to be met for immediate requirement. The mismatch between loan funds availed and that actually required resulted in burden of differential interest of ₹2.45 crore[12] that could have been avoided.

4.8.6 Creation of liability due to failure to meet statutory obligations

The Company is required to comply with the requirements of various statutes relating especially to taxation, utility charges and mandatory cess such as water usage charges, labour cess, etc. Audit observed the following:

(a) Liability on account of Water Usage Charges

As per the Jammu and Kashmir Water Resources (Regulation and Maintenance) Act, 2010, water usage charges were required to be paid by the Company for usage of water for generation of electricity at the rate prescribed under the Act. Audit scrutiny of records of five divisions[13] revealed that the Irrigation and Flood Control Department had raised bills on the Company for ₹1,575.61 crore on account of water usage charges for the period November 2010 to December 2015 out of which ₹20 crore had been paid by the Company as of June 2016. Non-payment of balance amount resulted in creation of a statutory liability of ₹1,555.61 crore on account of water usages charges.

The Management stated (October 2016) that as per directions of the JKSERC, liability of water usage charges was to be borne by the JKPDD and as such

[12] Interest charged by PFC: ₹6.74 crore (-) Interest earned on FDR after deduction of IT: ₹4.18 crore (-) Commitment charges: ₹0.11 crore = ₹2.45 crore

[13] Generation Division of BHEP-I, LJHP, CHEP, Pahalgam HEP and EPD Jammu

the Company was sending bills of water usage charges raised by the Irrigation and Flood Control Department to the JKPDD. The reply is not tenable as the Company was to first pay the water usage charges to the Irrigation and Flood Control Department as a statutory liability and thereafter claim reimbursement from the JKPDD.

(b) Non-levy and collection of Labour Cess

Under the Jammu and Kashmir Building and Other Construction Workers (BOCW) Rules 2006, all Government departments and PSUs carrying out any construction works are required to deduct labour cess of one *per cent* of the gross amount of bill raised by the contractor and remit with the Board[14] within 30 days. Audit scrutiny of records of the five divisions showed that payment of ₹1,782.99 crore on account of Civil and Electro Mechanical works of BHEP-I and II were made to the contractors during June 2011 to December 2015 after deduction of only ₹0.25 crore as labour cess from the bills of the contractors against the cess claim of ₹17.83 crore and the balance of ₹17.58 crore had neither been deducted from the contractors bills nor deposited with the Board. Thus, the Company had not only failed to meet a statutory requirement but also created an unnecessary liability of ₹17.58 crore. The Company had exposed itself for imposition of penalty of not exceeding the amount of labour cess under BOCW Rules, 2006.

The Management stated (October 2016) that the liability would be discharged after getting the approval from the State Government.

4.8.7 Tariff Fixation

The Company is required to file an application for approval of Generation Tariff for each year with the JKSERC (Commission). The Commission accepts the application and issues an order for generation tariffs for the year after considering all suggestions and objections from all stakeholders. Audit observed the following:

(a) Regulation 7 of the JKSERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations 2011 stipulate that only income tax related to the core business of the utility would be allowed as pass through in tariff and be recovered from beneficiary (JKPDD). The Company had paid ₹96.96 crore as taxes on income during 2013-14 and 2014-15 which had not been allowed as part of expenditure by the Commission due to non-furnishing of details of income/expenditure/income tax by the Company on core business. The Commission directed (February 2014) the Company to submit the details of income tax paid duly certified by a chartered accountant along with tariff petition for 2015-16.

[14] Constituted in July 2007 under BOCW Rules 2006

The Company did not submit the requisite details within the prescribed time limit up to February 2015 and failed to claim of ₹96.96 crore spent on taxes. This resulted in fixation tariff by the Commission on a lower side. The Management stated (June/October 2016) that the information stands submitted to the Commission with tariff petition for the year 2016-17 and the Commission had directed the Company to submit detailed information with next tariff and a revised petition was being filed with the Commission for allowance of income tax paid by the Company.

(b) Indicative tariff is fixed by the JKSERC by dividing Annual Fixed Charges with design energy or Net Saleable Energy (NSE). The Company failed to generate energy to the extent of design energy resulting in non-recovery of expenditure of ₹275.85 crore through tariff during the period 2011-12 to 2015-16. The Management attributed (October 2016) poor generation to obsolescence as well as non-availability of the water discharge/low hydrology.

Hence, failure of the Company to submit requisite details to the JKSERC at time of tariff fixation resulted in non-recovery of ₹372.81 crore.

4.9 Non-qualifying the projects under MPP status

After commissioning of BHEP-I the Company submitted (May 2010) a Detailed Project Report (DPR) for BHEP-II to the Central Electricity Authority (CEA) for techno economic clearance. The CEA cleared (December 2010) the DPR with a cost of ₹2,113.09 crore without Mega Power Project (MPP) status and at ₹2,007.29 crore with MPP status[15]. The Company had incurred an expenditure of ₹2,568.46 crore on the project as of March 2016.

The Company could not avail the fiscal benefits of exemption of taxes and duties available to the projects having MPP status as it had not applied for obtaining the MPP status within the cutoff date (19 July 2012) which resulted in non-availing of benefits to the extent of ₹105.80 crore besides, non-deriving the benefits of fixation of low rate of tariff vis-à-vis ₹2.45 per unit with MPP status against the tariff of ₹2.58 per unit without MPP status.

The Management stated (March 2016) that the matter had been taken up with the Government. It was further stated (October 2016) that as per guidelines the project did not qualify for MPP status. Audit observed that projects located in Jammu and Kashmir having capacity of 350 MW or more qualify for MPP status and the Company had lost the opportunity to avail fiscal benefits of exemption of taxes and duties eligible for project under MPP status.

15 In Jammu & Kashmir MPP status is given to projects having capacity of 350 MW or more (it varies between States) which are entitled for fiscal benefits of taxes, duties, custom exemptions. These fiscal benefits would result in reduction in capital cost and consequent fixation of lower tariff rate

4.10 Operational Performance

The operational performance of the power stations of the Company fell short of norms in terms of achievement of design energy, plant load factor and plant availability factor and forced outages during the period of review as brought out below.

(i) Based on the targets computed in terms of units (kWh) by taking into account the design energy, the position of the design energy and actual generation of power during the period from 2011-12 to 2015-16 is shown in **Table-4.5** below.

Table-4.5: Details of Design Energy and Actual Generation

(Figures in MUs)

Year	Total design energy			Achievement			Shortfall	Percentage of Shortfall	Growth
	BHEP-I	Others[16]	Total	BHEP-I	Others	Total	Others	Others	BHEP-I
2011-12	2536	1550	4086	2801	1063	3863	487	31.42	-
2012-13	2536	1554	4090	2842	1124	3967	430	27.67	41.76 (1.49)
2013-14	2536	1567	4103	2800	976	3776	591	37.72	(-)42.72 (1.50)
2014-15	2536	1569	4105	2945	1034	3979	535	34.10	145.09 (5.18)
2015-16	2536	1554	4105	2953	1077	4030	477	30.71	(-)8.00 (0.20)
Total	**10144**	**7794**	**20489**	**14341**	**5274**	**19615**	**2520**	**32.33**	

Against the design energy of 2,536.07 MUs in respect of BHEP-I, the Company achieved generation of energy more than the design energy which ranged between 2,800 MUs and 2,953 MUs during the period 2011-12 to 2015-16. However, in case of all the other power houses, there was a shortfall in design energy between 27.67 *per cent* and 37.72 *per cent* during 2011-12 to 2015-16.

(ii) Plant Load Factor (PLF) is the ratio of the actual generation and the maximum possible generation at design/installed capacity. During the period 2011-12 to 2015-16, against the average design PLF of all HEP ranging between 56 *per cent* and 58 *per cent*, the actual average PLF remained between 22 *per cent* and 29 *per cent* which was also very low as compared to norms of 80 *per cent* fixed by the CERC.

(iii) Plant Availability Factor (PAF) is the ratio of actual hours operated to maximum possible hours available during a fixed duration of time. The various operational parameters of the Company for the period 2011-12 to 2015-16 are given in **Table-4.6**.

[16] Taken 20 projects excluding BHEP-II

Table-4.6: Details of operational parameters of the Company

S. No.	Particulars	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Total hours available	421492	452838	441940	438987	379421
2.	Operated hours	221638	232944	212645	178815	157588
3.	Planned outages (in hrs.)	17787	14049	24878	13554	19934
4.	Forced outages (in hrs.)	165969	200681	199267	241722	197460
5.	Percentage of forced outages to total available hours	39.38	44.32	45.09	55.06	52.04
6.	Forced outages in excess of CEA norms (in hrs.)	123820	155397	155073	197823	159517
7.	Plant availability (in Percentage) (Weighted average)	67.87	76.66	72.34	70.22	64.34
8.	Capacity utilization (in Percentage)	43.13	36.96	33.30	32.30	36.88
9.	Average design PLF (percentage)	58.79	56.83	56.75	56.81	56.81
10.	Average actual PLF (percentage)	29.27	28.33	24.09	22.68	23.73

(Source: Information as furnished by the Company)

Against CERC norms of 85 *per cent* for 2010-19, the weighted plant availability during the year 2011-12 was 67.87 *per cent* which increased to 76.66 *per cent* (2012-13) and decreased to 64.34 *per cent* (2015-16) which resulted in short operation of the project and ultimately low power generation.

(iv) As per CEA norms, forced outages up to 10 *per cent* of the total available hours is allowed for each HEP. Forced outages of 7,91,630 hours were recorded in excess of CEA norms during the period 2011-12 to 2015-16 in 20 HEPs ***(Appendix-4.1)***. The forced outages for the year 2011-12 were 39.38 *per cent* and increased to 52.04 *per cent* ending 2015-16.

(v) Energy consumed by power stations for running their own equipment and for providing common services is called Auxiliary Consumption. JKSERC allowed (June 2003) 0.50 *per cent* of power generated to be used as auxiliary consumption. Audit scrutiny of records showed that during the period 2011-16, the auxiliary consumption exceeded the JKSERC norms of 0.50 *per cent* to the maximum of 5.86 *per cent* i.e. 27.58 MUs valuing ₹7.96 crore in respect of 18 HEPs[17].

The Management stated (October 2016) that small hydel projects had been commissioned 15-40 years ago and they had outlived their useful life, experienced frequent damages and were running at de-rated capacities and could not be expected to generate as per design energy calculated at the time of conception. Further, these were run of the river projects whose generation was dependent

[17] BHEP-I, CHEP-I, CHEP-II, CHEP-III, Karnah, Pahalgam, Stakna, Sumoor, Iqbal, Haftal, Marpachoo, Bhaderwah, USHP I, Old Ganderbal, Bazgo, Hunder, Haptal and Igo-Mercelong

upon variation in snowfall/rainfall and change in hydrology parameters over time. They added that renovation, modernisation and uprating of outlived power houses together with regular plugging of water leakages, maintenance of electric mechanical equipment and civil infrastructure were being carried out to improve generation of these power houses and reduce auxiliary consumption.

Audit observed that in terms of generation of power against the design energy, all the other 19 projects of the Company showed shortfall in generation of energy except BHEP-I and of late Lower Jhelum HEP. Further, the design energy had been re-validated in the year 2009 by the consultant engaged by the Company after taking into account the factors stated in the reply. Further, the decrease in the plant load factor and continuous increase in the percentage of forced outages was indicative of lack of timely measures and preventive maintenance to mitigate the extent of outages. Due to above reasons of low generation, huge forced outages, low utilisation of available capacity and low plant load factor, the power houses were unable to make profit except BHEP-I during 2012-13 to 2014-15 and CHEP-I, LJHP and USHP-I during 2013-14 (₹1,016.05 crore, ₹1.30 crore, ₹3.30 crore and ₹8.26 crore respectively). Other hydel projects suffered losses of ₹352.15 crore during 2012-13 to 2014-15. The JKSERC, while issuing tariff order for the year 2015-16, directed the Company to conduct viability studies of all existing projects and suggest strategy to improve their profitability. However, no such viability study had been conducted so far (May 2016) nor had the Company undertaken any remedial measures to improve generation and reduce the expenditure to make the projects viable.

The Management stated (October 2016) that a committee constituted for conducting viability study of the existing Power Houses under the chairmanship of Chief Engineer (Generation) Kashmir had not submitted the final viability report.

4.11 Renovation, Modernisation and Uprating

Timely and systematic renovation and maintenance is essential to maintain power generation and reduce generation losses. The BoD sanctioned (August 2005) a Renovation, Modernisation and Uprating (RMU) programme for seven HEPs[18] at a cost of ₹208.96 crore which were to be completed within a period of one to three years. The Company had incurred an expenditure of ₹146.57 crore[19] on the seven HEPs ending March 2016. Audit observed the following:

[18] USHP-I (₹25 crore), Chenani-I (₹39.14 crore), Ganderbal (₹39.30 crore), LJHP (₹101.30 crore), Bazgo (₹1.32 crore), Hunder (₹1.77 crore) and Sumoor (₹1.13 crore) HEPs

[19] USHP-I (₹24.59 crore), Chenani-I (₹14.31 crore), Ganderbal (₹9.39 crore), LJHP (₹96.09 crore), Bazgo (₹0.77 crore), Hunder (₹0.86 crore) and Sumoor (₹0.56 crore) HEPs

(i) RMU of CHEP-I was approved in August 2005 at a cost of ₹39.14 crore to enhance the capacity of the power house from 17 MWs to 23.30 MWs and generate an additional 33.85 MUs. Due to lack of response, the works were split into 50 electro-mechanical works and 20 civil works and works awarded in piecemeal between June 2011 to March 2015. Of these, 40 electro-mechanical and 19 civil works had been completed (March 2016) at an expenditure of ₹14.04 crore. Delay in completion of the RMU resulted in loss of generation of 33.85 MUs valued at ₹6.77 crore per annum. The Management stated (October 2016) that electro-mechanical works were under progress and would be completed in the current financial year and that the civil work had been allotted to a contractor.

(ii) Unit-I and II of Pahalgam HEP had defect of recurring vibration since its commissioning in 2005. However, the defects had not been removed as of October 2016 resulting in operation of units at a de-rated capacity of only one MW against the three MW capacity which resulted in loss of generation of 10.38 MUs per annum valued at ₹3.40 crore. The Management stated (October 2016) that the said work allotted (July 2016) to a contractor was scheduled to be completed by March 2017.

(iii) CHEP-III commissioned (2001) started leaking during testing process which remains unrectified. The Company ultimately decided in 2012 to rectify the same and the power house remained under shutdown during July 2012. The Company invited (December 2013) tenders for the works but had to cancel it (February 2014) due to poor response. The works are still pending for award. The Company had to bear loss of generation to the extent of 3.01 MUs valuing ₹1.05 crore annually. The Management stated (October 2016) that a permanent solution was being worked out in consultation with IIT Roorkee.

(iv) The Stakna Power Project (2x2 MW) was transferred (January 2011) by the State Government to the Company with only one machine/unit running at 25 *per cent* of the installed capacity due to need for replacement of electro mechanical parts. The power project was put (April 2013) under complete shutdown. In order to restore the plant to its capacity, the Company engaged (March 2015) a consultant for preparation of a DPR at a cost of ₹4.50 lakh. This was, however, yet to be finalized. Thus, non-replacement of electro-mechanical parts has resulted in loss of generation of 58.56 MUs units valuing ₹2.44 crore (March 2016) per annum. The Management stated (October 2016) that a DPR framed by IIT Roorkee was being examined.

Thus, delay in undertaking essential repair and renovation works resulted in loss of generation valued at ₹13.66 crore per annum.

4.12 Human Resources

The position of sanctioned staff and effective strength in the Company at the end of each year during 2011-12 to 2015-16 is given in **Table-4.7** below.

Table-4.7: Details of sanctioned and effective staff strength

Year	Sanctioned strength	Effective strength	Increase/ decrease (-) in sanctioned strength	Increase/ decrease (-) in effective strength	Percentage of effective manpower to sanctioned strength
2011-12	5035	3077	NA	NA	61
2012-13	5127	2934	92	143	57
2013-14	5216	2809	89	125	54
2014-15	5292	2664	76	145	50
2015-16	5343	2517	51	147	47

Audit observed the following:

(i) The sanctioned strength during 2011-12 to 2015-16 had increased over the years though the effective strength decreased to 2,517 (March 2016) from 3,077 (March 2012). The effective strength remained lower side than the sanctioned strength during all the years ranging between 47 *per cent* and 61 *per cent* during 2011-16. The Management informed (October 2016) audit that steps had been taken to formulate a recruitment policy and a committee headed by Executive Director, Electrical had been constituted for the purpose.

(ii) CEA has recommended norms for deployment of human resources in projects on the basis of installed capacity. The position of actual human resources of the Company with reference to CEA recommendations is shown in **Table-4.8** below.

Table-4.8: Expenditure on Salaries

S. No.	Particulars	2011-12	2012-13	2013-14	2014-15	2015-16
1.	Sanctioned strength	5035	5127	5216	5292	5343
2.	Human resources as per the CEA recommendations*	1452	1452	1454	1457	1994
3.	Actual Human resources	3077	2934	2809	2664	2517
4.	Expenditure on salaries (₹ in crore)	99.92	98.04	101.38	94.40	110.32
5.	Human resources in excess of CEA norms [(4-3)] (percentage of excess)	1625 (112)	1482 (102)	1352 (93)	1207 (83)	523 (26)
6.	Extra expenditure with reference to CEA norms (₹ in crore) [(5/4) x 6]	52.77	49.52	48.90	42.77	22.92

**** CEA recommended 1.79 and 0.53 number of employees per MW (including both technical and non-technical) for Hydro Projects and Gas Based Projects respectively.***

The human resources deployed by the Company were in excess of the CEA recommendations by 26 *per cent* to 112 *per cent* during the period 2011-12 to 2015-16. The expenditure in excess of the recommendations amounted to ₹216.88 crore.

(iii) Employee productivity in relation to capacity, generation, revenue, employee cost and net profit during the period 2011-12 to 2015-16 is shown in **Table-4.9** below.

Table-4.9: Employee Productivity

S. No.	Particulars	2011-12	2012-13	2013-14	2014-15	2015-16
	No. of employees[20]	**3077**	**2934**	**2809**	**2664**	**2517**
1.	Installed capacity (in MWs[21])	758.70	759.20	761.96	761.96	1061.96
	Number of employee per MW of capacity	**4.05**	**3.86**	**3.69**	**3.50**	**2.37**
2.	Generation (in MUs)	3863.34	3966.97	3776.23	3978.76	4030.31
	Generation per employee (in MUs)	**1.26**	**1.35**	**1.34**	**1.49**	**1.60**
3.	Revenue from generation (₹ in crore)	1119.90	1109.20	992.29	1027.36	1041.58
	Revenue per employee (₹ in crore)	**0.36**	**0.38**	**0.36**	**0.39**	**0.41**
4.	Total employees cost (₹ in crore)	99.92	98.04	101.38	94.40	110.32
	Employee Cost per employee (₹ in crore)	**0.03**	**0.03**	**0.04**	**0.03**	**0.04**
5.	Total Net profit (₹ in crore)	124.95	308.07	168.73	214.33	98.19
	Net profit per employee (₹ in crore)	**0.04**	**0.11**	**0.06**	**0.08**	**0.04**

(Source: Annual accounts of the Company as well as NHPC, besides, information furnished by the Company)

The employee per MW of installed capacity stood at 4.05 per MW during 2011-12 which gradually improved to 2.37 per MW during 2015-16. Similarly, the generation per employee stood at 1.26 MUs during 2011-12 which improved to 1.60 MUs during 2015-16. Revenue per employee improved to ₹0.41 crore during 2015-16 from ₹0.36 crore during 2011-12. Per employee cost remained around ₹0.04 crore during 2011-16. Thus, there was an apparent need for the Company to review and rationalise its staff structure and strength keeping in view the recommendations of the CEA.

4.13 Internal Control

Internal control is a process for assuring operational effectiveness, efficiency, reliable financial reporting and compliance with laws, regulations and policies.

[20] This includes employees of Gas turbine Division which also looks after the work of Pahalgam MHP
[21] Only Hydro capacity Power Projects

4.13.1 Internal Audit

Internal audit of 16 division/offices out of 42 had been conducted upto 2014-15 in Jammu region. No internal audit had been conducted of any division/ office in Kashmir and Leh region for 2014-15. The internal audit reports had not been placed before BoD for taking corrective measures.

The Management stated (October 2016) that the Company had appointed (July 2016) internal auditors for conducting audit for the period 2014-17 and that internal audit of paying units of Leh, Kargil and Kishtwar had been conducted and internal audit of Jammu, Sawalkote and Baglihar were under process.

4.13.2 Physical Verification of store/stock

Physical verification that is required to be conducted at least once a year had not been conducted in six[22] out of 18 test-checked divisions for the year ended 2014-15. Unserviceable items valuing ₹1.47 crore were lying in the stores of nine divisions while valuation of unserviceable items lying in 10 other divisions[23] had not been done.

Physical verification of the Store at LJHP Baramulla had not been conducted for over 10 years. Audit noticed that theft of 481 copper bars valuing ₹57.72 lakh had occurred at the store in October 2012. The report of the departmental enquiry was awaited (March 2016). The Management stated (October 2016) that FIR had been lodged with police which had filed the challan in the court.

4.14 Conclusion

The financial position of the Company was adversely affected by delay in release of funds from the State Government as well as poor financial management. The Company had to bear an avoidable interest burden of ₹2.45 crore due to premature drawal of funds and in creation of statutory liability of ₹1,573.19 crore due to non-payment of labour cess and water usage charges. The poor financial position was further impacted by delay in submission of requisite documents to Jammu and Kashmir State Electricity Regulatory Authority (JKSERC) for tariff fixation which resulted in non-recovery ₹372.81 crore.

On the operational front, the Company could not achieve design energy leading to low Plant Load Factor and low capacity utilization and the excessive forced outages led to projects becoming financially non-viable. Delay in completion of renovation, modernisation and uprating resulted in loss of generation.

[22] CCD-I&II Lower Kalnai, CCD-II Parnai, SEWA-III, Civil Maintenance Divisions (CMD) of Chenani and Lower Jhelum HEP and Generation Division of Lower Jhelum HEP (LJHP)

[23] CCD-I&II of Lower Kalnai, CCD-I&II of Parnai HEP, SEWA-III HEP, CMD, Generation Division and Power House Division of BHEP, Electric Procurement Division Jammu and GTD Pampore

4.15 Recommendations

In the light of the audit findings it is recommended that the Company and Government may consider:

- **Ensuring prompt transmission of claims of the Company to the Jammu and Kashmir Power Development Department to avoid debt burden and to minimize interest burden;**
- **Improve financial management to ensure that drawal of loan funds are linked to their actual utilisation;**
- **Ensure timely payment of statutory obligations; and**
- **Improve operational performance by effective monitoring of plant load factor as well as timely renovation and modernisation.**

The audit findings were communicated to the Government in August 2016; their reply was awaited (October 2016).