

## CHAPTER-II PERFORMANCE AUDIT

### Multipurpose Projects and Power Department

#### 2.1 Hydro Power Development through Private Sector Participation

Recognising the importance of Hydro Power Sector as a key to the prosperity of the State, the State Government formulated its Hydro Power Policy in December 2006 in order to promote efficient, ecological and environmental friendly hydro power generation. The policy stipulated four pronged strategy through participation of State Sector, Central Sector, Joint Sector and Private Sector in the development of hydro power in the State.

A performance review of the implementation of hydro power projects through Private Sector participation covering the aspects of allotment, implementation, environment and monitoring of the projects revealed that there are many areas of concern and issues requiring urgent attention of the State Government.

##### Highlights:

- *Out of total 559 projects of 10131 Mega Watt (MW) capacity allotted during November 1991 to 2011-12, only 55 (10 per cent) projects with 1805.45 MW were completed and made operational during 1992 to 2011-12.*

*(Paragraph 2.1.7.1)*

- *Execution of 40 projects having total capacity of 315.35 MW could not progress well and suffered due to the reasons such as non-conducting of feasibility studies, non-approval of Detailed Project Reports by the department and non-signing of Implementation Agreements by Independent Power Producers within the prescribed time frame. Besides, there were delays ranging between 13 and 113 months in completion of 27 small hydro power projects of 95.80 MW due to non-resolution of local issues.*

*(Paragraph 2.1.8.1 to 2.1.8.2 (i))*

- *The plantation activity was highly deficient as 58 per cent of test-checked projects reported no plantation; posing severe hazard both for natural ecology and stabilisation of hill slopes.*

*(Paragraph 2.1.9.1)*

- *Negligence of environmental concern was quite visible as for the sustenance of aquatic eco system and nearby ground water aquifers, minimum water flow of 15 per cent immediately downstream was not kept by one Independent Power Producer.*

*(Paragraph 2.1.9.2)*

- *Though in 12 out of 34 test-checked projects, employment opportunities to bonafide Himachalis were provided to the prescribed extent of 70 per cent, in 19 projects there was no evidence of employment opportunities actually provided and in the remaining three projects employment provided ranged between 44 and 49 per cent only.*

*(Paragraph 2.1.12)*

- *Prescribed monitoring mechanisms for ensuring effective implementation of projects and project safety, quality control and other management systems were non-existent in the Department.*

*(Paragraph 2.1.15)*

### 2.1.1 Introduction

Power is a critical infrastructure for the socio-economic development of the State and the country as a whole. Accelerated pace of hydro power development gives an impetus to economic growth in the new globalised economic scenario. The basic responsibility of 'Electricity Industry' is to provide adequate power at economical cost, while ensuring reliability and quality of supply. Hydro power potential has been recognised as the key to the development of Himachal Pradesh. The five<sup>1</sup> major rivers which flow through the State have identified hydro power potential estimated around 23000 Mega Watt (MW) as depicted in **Map 2.1** below:

Map-2.1



Source: Website of Directorate of Energy.

<sup>1</sup> Beas, Chenab, Ravi, Satluj and Yamuna.

As per National Electricity Policy of 2005, Government of India (GOI) had laid maximum emphasis for full development of the feasible hydro power potential in the country and launched 50,000 MW hydro initiatives to be pursued vigorously. The GOI has further emphasised that the States with hydro potential, need to focus on the full development of this potential at the earliest. Pursuant to this, the State Government had identified power potential of 23,000 MW through the hydro power sector. Against this, hydro power generation projects having capacity of 10131 MW were sanctioned for execution through Private Sector during 1991-92 to 2011-12.

#### 2.1.1.1 Hydro Power Policy

The State Government notified (December 2006) Hydro Power Policy with the following main principal objectives:

- Speeding up power development in the State and to achieve capacity addition of 9000 MW through hydro power sector by the end of 11<sup>th</sup> Five Year Plan (2011-12);
- Making power sector a major source of revenue to the State;
- Generating and providing employment opportunities to the people of the State; and
- Achieving development of local area by creation of Local Area Development Committees financed through power projects.

As per the Hydro Power Policy, projects upto 5 (five) MW shall be allotted through the Memorandum of Understanding (MOU) route. Upfront premium is exempt for projects upto 2 (two) MW. For projects above 2 (two) MW and upto 5 (five) MW, the rate of upfront premium is ₹ 45000 per MW with the ceiling of ₹ 75000 per MW. Projects above 5 (five) MW shall be allotted through the competitive bidding route with fixed upfront premium/ charges of ₹ 20 lakh per MW capacity of the project.

As per the policy *ibid*, in respect of private sector participation (independent power producer (IPP)) the offer period of projects is as under:

- Projects upto 5 (five) MW : 40 years after 30 months from the date of signing of the Implementation Agreement (IA). Thereafter the project is to be transferred to the State Government free of cost and free from all encumbrances.
- Projects above 5 (five) MW : 40 years from the scheduled commercial operation date of the project. Thereafter the project is to be transferred to the State Government free of cost and free from all encumbrances.

As per amended (January 2008) provisions of the Hydro Power policy, royalty on usage of water in the shape of free power ranging from six to 30 *per cent* of the deliverable energy<sup>2</sup> is chargeable in three time bands<sup>3</sup> from the Independent Power Producers (IPPs).

### **2.1.2 Organisational Set-up**

The Additional Chief Secretary (Power) to the Government of Himachal Pradesh is the administrative head in the Government for formulating policies relating to hydro power development. The Director of Energy and Himachal Pradesh Energy Development Agency (HIMURJA), a Government owned agency, has been designated as nodal agency for hydro power development involving IPPs. While the Director of Energy is responsible for monitoring and implementation of power projects above 5 (five) MW, HIMURJA has been entrusted with the responsibility of implementation of projects upto 5 (five) MW as per directions given by the State Government from time to time.

### **2.1.3 Scope of Audit**

Between November 1991 and January 2012, 559 projects with a total installed generation capacity of 10,131 MW were allotted to the IPPs in the State. These have been classified in the following categories:

Small Hydro Power Projects upto 5 (five) MW;

Hydro Power Projects above 5 (five) MW and upto 100 MW; and

Hydro Power Projects above 100 MW.

As of March 2012, 55 out of 559 projects were operational and the remaining were in various stages of implementation.

#### **Selection of sample for performance audit:**

For the purpose of performance audit, the following audit sample was selected by adopting Simple Random Sampling Without Replacement (SRSWOR) method after stratifying the entire projects into five categories. The details of the audit sample selected for test-check is detailed in *Appendix-2.1*.

Stratum-I        Projects upto 5 (five) MW: Out of 466 projects, 117 projects (operational: 12; under construction: 13 and under investigation: 92) selected;

<sup>2</sup> The energy generated at the station as measured at generator (s) terminal less auxiliary consumption and transmission losses upto power station.

<sup>3</sup>

Category of Project	Rate of royalty ( <i>Per cent</i> )		
	First 12 years	Next 18 years	Remaining 10 years
Upto 5 (five) MW	6	15	24
From 5 (five) MW to 25 MW	15	21	33
Above 25 MW	12	18	30

Stratum-II	Projects above 5 (five) MW and upto 10 MW: Out of 30 projects, eight projects (operational: one; under construction: two and under investigation: five) selected;
Stratum-III	Projects above 10 MW and upto 25 MW: Out of 26 projects, seven projects (operational: one; under construction: one and under investigation: five) selected;
Stratum-IV	Projects above 25 MW and upto 100 MW: Out of 15 projects, five projects (operational: one; under construction: one and under investigation: three) selected; and
Stratum-V	Projects above 100 MW: Out of 22 projects, seven projects (operational: one; under construction: one and under investigation: five) selected.

The sample check was, thus, 26 *per cent* of the total projects allotted to the IPPs by the State Government.

The performance audit was conducted during February-June 2012 by test-check of records in the offices of the Director of Energy, the Chief Executive Officer, Himachal Pradesh Energy Development Agency (HIMURJA), Himachal Pradesh State Environment Protection and Pollution Control Board, Deputy Commissioners/ Sub-Divisional Officers, District Labour Officers and Divisional Forest Officers of six<sup>4</sup> out of 12 districts in the State where the selected projects were located. Besides, information relating to generation and purchase of power and Fisheries development was also obtained from the Himachal Pradesh State Electricity Board Limited (HPSEBL) and the Chief Warden-cum-Director of Fisheries respectively.

#### **2.1.4 Audit Objectives**

The audit objectives were to ascertain whether:

- planning, identification of project sites; estimation of potential capacity; selection of IPPs and allotment procedures was efficient and effective;
- the implementation of IPP projects was efficient and effective;
- effective monitoring mechanism at all levels i.e. State, district and sub-division was in place to monitor the issues arising during the implementation of the projects, review of environment plans, local area development schemes and relief and rehabilitation activities in the project areas.

<sup>4</sup> Chamba, Kangra, Kinnaur, Kullu, Mandi and Shimla.

### **2.1.5 Audit Criteria**

The criteria used for assessing the performance of hydro power development through private sector participation covering the aspects of allotment, implementation and hydro power generation included:

- Procedures and impact parameters prescribed in the guidelines issued by the Union Ministry of Power, Union Ministry of Environment and Forests (MoEF), Central Electricity Authority (CEA) and the Central Water Commission from time to time relating to development of hydro power projects.
- The system of allotment of projects as outlined in State's Hydro Power Policy of 2006.
- Adequacy of system of monitoring of the IPP projects and its effectiveness.

### **2.1.6 Audit Methodology**

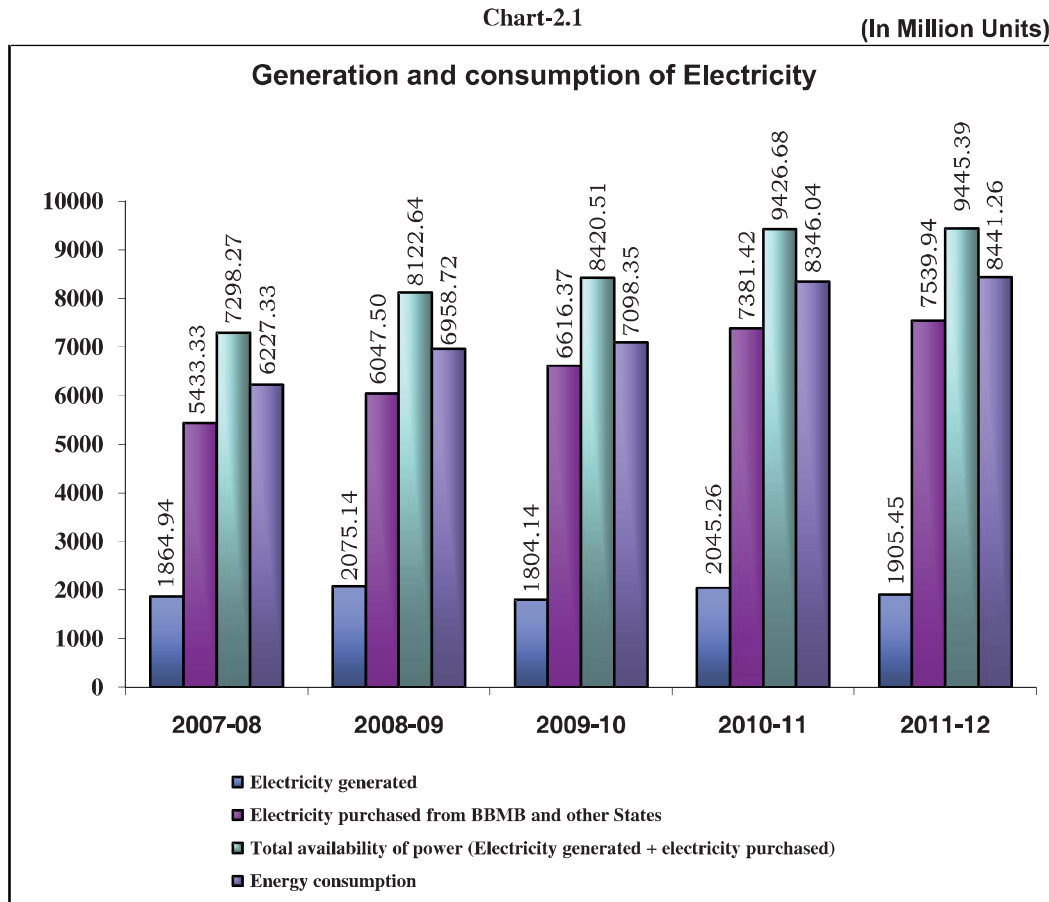
An entry conference was held (April 2012) with the Principal Secretary (Power) wherein scope of audit, objectives, criteria and sampling methodology adopted for selection of projects were discussed.

Records relevant to identification, approvals, allotment, execution and environmental impact were scrutinised. Audit also conducted spot inspection of 34 out of 144 projects selected for detailed audit scrutiny.

Audit conclusions were drawn after scrutiny of available data by issuing audit memos and obtaining response of departmental functionaries such as Director of Energy, Chief Executive Officer, HIMURJA, Himachal Pradesh State Environment Protection and Pollution Control Board, Director of Fisheries, Deputy Commissioners/ Sub-Divisional Officers in the concerned districts, District Labour Officer in the concerned districts and Divisional Forest Officer in whose territories projects were located at various levels and authorised representatives of IPPs. Photographic evidence and physical verification were also taken into consideration to substantiate audit observations. The audit findings were discussed with the Additional Chief Secretary (Power) in the exit conference held on 12 November 2012. Views of the Government have been incorporated at appropriate places in the report.

### 2.1.7 Availability and consumption of power

The year-wise position of availability of power and consumption thereagainst in the State during 2007-12 is depicted in **Chart 2.1** below:



Source: Economic survey 2011-12 (Economics and Statistics Department of Himachal Pradesh).

Note:1 BBMB: Bhakra Beas Management Board.

Note:2 Electricity generated indicates, generation of power by the HPSEBL.

Note:3 Total availability of power is inclusive of Transit and Distribution losses.

As is seen from Chart-I, during the past five years 2007-12, the position of power generation through HPSEBL remained almost constant. However, to meet energy requirement within the State, HPSEBL also purchased power from other sources during the above period but consumption of power in the corresponding period was less than the total availability of power due to seasonal variations in generation and consumption of power. The HPSEBL, after meeting energy requirements in the State, sold the balance energy (after deduction of 'Transmission and Distribution' losses) outside the State. The Department attributed (May 2012) low generation of power to less discharge of water.

- **Revenue to State Government from sale of free power**

Position of revenue earned by the State Government during 2007-12 from sale of free power from Hydro Power Projects is given in **Table 2.1** below:

**Table -2.1**

**Position of revenue received by the State Government from sale of free power**

Year	Revenue received (₹ in crore)	Decrease in revenue (in <i>per cent</i> ) with reference to 2007-08
2007-08	1569.94	--
2008-09	1543.60	02
2009-10	1550.95	01
2010-11	1075.00	32
2011-12	1000.00	36

Source: Figures supplied by the HPSEBL and Directorate of Energy.

It would be seen from the above table that the revenue earned through overall sale of free power by the State Government has decreased from ₹ 1569.94 crore in 2007-08 to ₹ 1000 crore in 2011-12 and the percentage of decrease during the last five years ranged between one and 36. However, separate data in respect of revenue earned from the private sector projects was not being maintained by the Department. The Department attributed (November 2012) the reasons for decrease in revenue to changed market scenario, significant increase in generation capacity, additions and strengthening of transmission system leading to increase in corridor availability for inter-State and inter-regional transference of power.

**2.1.7.1 Hydro Power Potential Harnessed**

The State had harnessed power potential of 6067 MW upto the end of 10<sup>th</sup> Five Year Plan (2002-07). The Hydro Power Policy, 2006 envisaged harnessing of 15,000 MW upto the end of 11<sup>th</sup> Five Year Plan (2011-12) by achieving capacity addition of 9000 MW. As against the target of 9000 MW, the State Government had harnessed 7922 MW (88 *per cent*) through collective efforts (State: 473 MW, Central/ Joint: 5644 MW and Private Sectors: 1805.45 MW respectively) till the terminal year of 11<sup>th</sup> Five Year Plan i.e. 31<sup>st</sup> March 2012.

In respect of IPPs, as against the target of generation of 10,131 MW power through 559 projects allotted to Independent Power Producers, the achievement was to the extent of 1805.45 MW during 1991-92 to 2011-12.

The Director, Energy stated (November 2012) that most of the un-achieved generation of power was due to delays incurred in Central Sector Projects which were beyond the control of the State Government.

**2.1.7.2 Basics of Hydro Power**

Hydro power, also known as hydroelectric power, uses water to generate electricity. When water is at a high point, it has potential energy and as it flows to a lower level, the



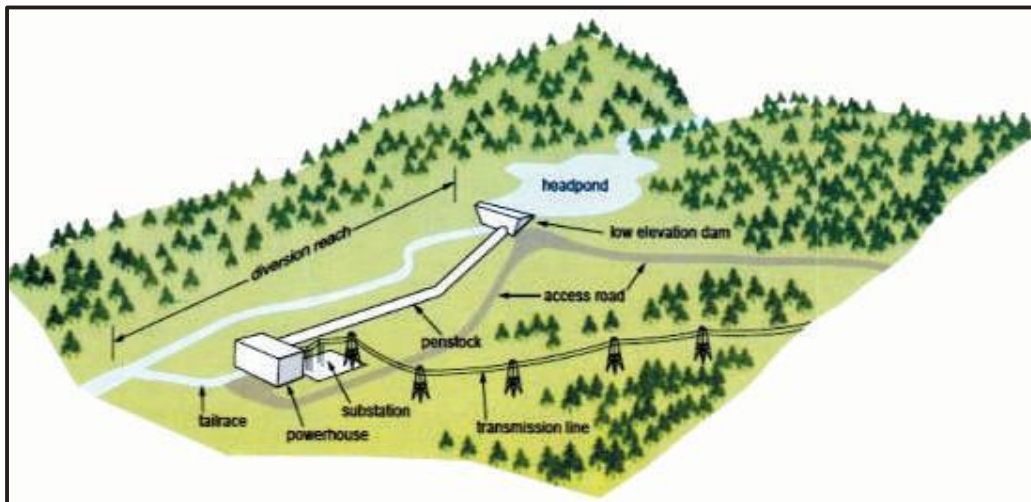
potential energy gets converted into kinetic energy. This water flows through a turbine making it spin and that turbine turns an electric generator, producing electricity. The hydroelectric projects could be "run of river" or "reservoir" based.

### 2.1.7.3 Run of river (ROR) hydro power projects

Run of river projects are different from conventional reservoir based hydroelectric projects in design, appearance and impact. These power projects simply divert a portion of the flow of a stream into a turbine that generates electricity; there is no water storage other than the limited amount required to submerge the intake pipe. The water is then returned downstream without alteration. A typical run of river project consists of a weir or small dam to create a small headpond. This headpond does not store water; it merely floods an area sufficient to ensure that the intake of the penstock is under water. A pipe known as *penstock*, carries water from the headpond to the turbines at a lower elevation. A power house building containing the turbines generates electricity from the flow of water. The diverted water is returned to the river downstream of the power house through a *tail race* channel. Transmission lines are connected from the power house to the nearest transmission system. The section of river between the dam and power house is called the diversion reach because significant quantities of water are diverted from this section of river.

The pictorial chart of ROR is given in **Chart-2.2** below:

**Chart-2.2**



The construction costs of ROR projects are significant, as are their terrestrial and aquatic impacts. When undertaken properly, with due care given to addressing environmental impacts, these projects can create sustainable green energy with minimal bearing on the surrounding environment and nearby communities.

#### **2.1.7.4 Identification of ROR sites**

Potential ROR sites must offer a significant elevation, drop and sufficient water flow. A key component of ROR plant's functionality is the height and pressure of falling water, known as 'head'. The power available at site is the product of the flow volume and the head. Therefore, higher the head, lesser the availability of water to produce power. ROR plants can be designed using large flow rates with low head or small flow rates with high head. By virtue of its topographical location, the State has a number of places endowed with substantial heights and perennial water flow. In the State, the ROR sites were identified by Alternate Hydro Energy Centre, University of Roorkee (Now IIT Roorkee).

### **Audit findings**

#### **2.1.8 Planning for harnessing of power potential**

As per National Electricity Policy 2005, importance of planning capacity addition to assess demand of electricity was stressed. Section 3 (4) of the said Act requires the Central Electricity Authority to frame a National Electricity Plan once in five years and to revise the same from time to time. The State Government was also to undertake a similar exercise.

It was, however, noticed that the Department had not prepared any Perspective Plan or Annual Plans during 2007-12 for harnessing of hydro potential. The Department admitted the facts (November 2012) and assured that Annual Plans would be prepared in future.

##### **2.1.8.1 Identification of project sites and allotment of projects to IPPs**

In terms of the State's Hydro Power Policy, small hydropower projects (SHPs) upto 2 (two) MW capacity are exclusively reserved for bonafide Himachalis and the Co-operative Societies comprising of bonafide Himachalis. For projects above 2 (two) MW and upto 5 (five) MW, preferences would be given to bonafide Himachalis. If there are more than one Himachali (Applicants), preference shall be given to the person of the area or the District. All projects above 5 (five) MW are allotted through competitive bidding route. Projects offered for private sector participation includes projects identified by the IPPs and HIMURJA. After the project is allotted, MOU or pre-implementation agreement as the case may be is signed by the IPP and thereafter conveyance of feasibility/ non-feasibility of the projects is to be ensured within one year from the date of signing of MOU/ pre-implementation agreement.

The following deficiencies were noticed in planning, implementation and execution of projects:

- **Inadequate pre-feasibility studies**

(i) Potential sites of small hydro projects were identified on the basis of preliminary reconnaissance only and no system existed in the Department to conduct pre-feasibility studies and assess accurately power potential to obviate the chances of enhancement of capacity addition at a late stage by the IPPs, bypassing the system of open bidding process and consequent loss of royalty. Audit scrutiny revealed that due to inadequacies in pre-feasibility studies coupled with non-availability of institutional mechanism with HIMURJA to cross verify the basis of capacity addition after allotment of projects. The capacity addition ranging between 40 and 1300 *per cent* was done by IPPs after allotment of 29 small projects upto 5 (five) MW initially having capacity of 112.50 MW as detailed in *Appendix-2.2*.

As per provisions of the State Hydro Power Policy, all projects above 5 (five) MW are required to be allotted through Competitive Bidding while projects below 5 (five) MW are allotted on the basis of applications received from the IPPs. Due to capacity additions after allotment of the projects by HIMURJA, the IPPs avoided the competitive bidding route and were thus benefitted to that extent.

(ii) In another case, M/s JP Karchham Hydro Corporation Ltd. and the State Government signed an IA in November 1999 for execution of 1000 MW (four units of 250 MW each) Karchham-Wangtoo project (Kinnaur district) after Techno-Economic Clearance (TEC) by the Central Electricity Authority (CEA). The project was commissioned in May 2011. Scrutiny of records in the office of the Director, Energy revealed that the IPP on its own had enhanced capacity to 1200 MW (four units of 300 MW) as brought to the notice of the State Government by the CEA during 2007-08. This showed that pre-feasibility study of potential site submitted by the IPP was not examined properly by the Department before seeking TEC from the CEA.

In the exit conference, the Additional Chief Secretary (Power) stated (November 2012) that a detailed basin-wise survey was afoot to assess the true potential of various hydro power sites in the State.

- **Non-conducting of survey/ feasibility study**

As per provisions of the State's Hydro Power Policy, IPP of a project above 5 (five) MW is required to conduct and convey feasibility/ non-feasibility of the project within a period of one year from the date of signing of MOU.

Audit noticed that MOUs of 10 projects exceeding 5 (five) MW each (total capacity 233.10 MW) were signed between June 2002 and February 2008 but the reports of requisite feasibilities, if conducted, were not submitted by the concerned IPPs within the time schedule. This was likely to impact the milestone prescribed in the MOUs for development of projects.

The Director of Energy in reply stated (November 2012) that these projects were initially allotted by HIMURJA and were transferred to the Director of Energy due to capacity enhancement resulting in delay in submission of the feasibility reports. The fact remains that failure of the Department to assess the power potential accurately at the initial stage itself led to delay in commencement of the projects.

In the exit conference, the Additional Chief Secretary (Power) stated (November 2012) that a detailed basin-wise survey was afoot to assess the true potential of various hydro power sites in the State.

- **Non-approval of Detailed Project Reports**

The State's Hydro Power Policy is silent on the vital issue of timeline for approval of Detailed Project Reports (DPRs) submitted by the IPPs. However, the State Government issued instructions (August 2009) for expeditious clearance of small hydro projects upto 25 MW. As per instructions *ibid*, the IPP is required to submit the DPR to HIMURJA/ HPSEB Limited, who will check the DPR and forward it to the Directorate of Energy within 10 days of its receipt for according TEC within three months of the date of receipt of DPR. The State Government further stipulated that IAs should be executed with the IPPs within 36 months from the date of signing of MOU.

It was noticed that the Chief Executive Officer (CEO) of HIMURJA submitted DPRs (between April 2003 and October 2011) of 60 small projects upto 5 (five) MW having total capacity of 144.05 MW to the Directorate of Energy for necessary approval but the same remained unattended as of June 2012. As a result, the process for development of power projects could not progress as execution of IAs with the IPPs of 21 projects (56.45 MW) in whose cases MOUs were signed between March 2001 and February 2008 could not be ensured within the prescribed period of 36 months. In response, the Director, Energy stated (November 2012) that TEC is accorded after detailed examination of the DPR and based on clarification sought from the State on various issues included in the DPR. Further, TEC for 179 projects upto 5 (five) MW having total installed capacity of 635.10 MW were accorded during the period.

The reply is not acceptable as the State Government's instructions (August 2009) stipulate that all queries/ clarifications should be obtained within the three months period and in case of non-response from the IPP, action for cancellation of the project could be initiated. This showed inefficiency of the Department in implementation of the hydro power development programme, causing inconvenience to the IPPs and consequent delays in execution of projects.

- **Non-signing of Implementation Agreements by the IPPs**

In respect of small projects upto 5 (five) MW, after approval of DPRs and TEC, the IPP is to be called for signing of IA and Power Purchase Agreement (PPA) within a period of

36 months from the date of signing of MOU. The TEC relating to nine projects having a capacity of 25.80 MW, was accorded between July 2002 and July 2007 but the concerned IPPs did not turn up to sign the IAs as of May 2012. This showed lack of effectiveness on the part of IPPs in taking up the execution of projects as the delay involved in signing of IAs ranged between 58 and 119 months as of May 2012. The Department failed to take appropriate action against the defaulting IPPs as per terms and conditions of the MOU for forfeiture of security deposits, cancellation of projects and also initiating further process for re-allotment of these projects.

In the exit conference, the Additional Chief Secretary stated (November 2012) that the Department is finalising a web based monitoring programme that will enable up to date monitoring of all milestones in relation to project implementation.

#### **2.1.8.2 Execution of Projects allotted to IPPs**

Out of 559 projects allotted during 1991-92 to 2011-12 for development through IPPs, with total generation capacity of 10131 MW, only 55 projects (10 per cent) with generation capacity of 1805.45 MW have been completed and are operational as detailed in *Appendix-2.3*. The remaining projects were at various stages of implementation as of March 2012 as detailed in *Appendix-2.4*.

##### **(i) Non-completion of projects**

As per provisions of the Hydro Power Policy and State Government instructions (April 2010), the implementation of small projects upto 5 (five) MW should start within six months from the date of signing of IA and construction by the IPP should be completed within a period of 30 months.

Audit noticed that IAs in respect of 27 small projects with aggregated capacity of 95.80 MW were signed by the IPPs between May 2000 and October 2008 but these remained incomplete involving delays ranging between 13 to 113 months as of May 2012.

The CEO of HIMURJA stated (May 2012) that delay in completion of works was due to delay in obtaining clearances from various departments and agitations and *dharnas* of local people and their unreasonable demands. The reply does not explain the reasons for such hindrances created by the local people after grant of statutory/ non-statutory clearances by the Government to IPPs. These could have been resolved through the District level/ Sub-Divisional level administration.

In the exit conference, the Additional Chief Secretary (Multipurpose Projects and Power) assured that the matter would be dealt with expeditiously.

## 2.1.9 Impact on Terrestrial Eco System

Though ROR projects do not involve submergence of vast areas of land and vegetation, yet construction of project facilities, access roads to the project site and transmission systems and lines involve deforestation. There are, thus, risks of soil erosion, disruption of local flora and fauna and disturbance to hill slopes. However, these effects can be mitigated through afforestation.

As per the condition laid down in the clearance issued by the State Forest Department/ Ministry of Environment and Forests, (MoEF), the IPPs were required to deposit funds towards compensatory afforestation as fixed by the authorities concerned based on the number of trees cut down and afforestation required. Audit noticed that IPPs of 12 projects had deposited the necessary funds for compensatory afforestation as worked out by the Forest Department but negligible afforestation was done as brought out in the succeeding paragraph.

### 2.1.9.1 Negligible afforestation

Compensatory afforestation is considered necessary to avoid soil erosion; for rehabilitation of degraded forest areas; for countering the effects of quarrying; for habitat improvement and for structural stabilisation of areas prone to landslides.

The status of afforestation in case of four operational projects and eight projects under construction which were part of the audit sample is given in **Table 2.2** below:

**Table-2.2**

**Details of afforestation done in sampled projects**

Stage	Name of the project	Forest Area (In hectares)	No. of trees cut down for the clearance	No. of trees to be planted	No. of trees actually planted
Operational	Gaj-II	4.447	16	9900	Nil
	Malana-I	61.00	990	5,29,000	3,36,500 (64)
	Sarvari-II	1.80	11	6,000	Nil
	Upper Awa	4.20	201	8,500	8,500 (100)
Under construction	Balargha	4.11	143	12,750	Nil
	Barseu	1.54	Nil	6,929	5,580 (81)
	Brahal	3.80	418	8,800	Nil
	Hurla	4.346	Nil	9,570	Nil
	Luni-II	2.62	203	5,250	5,250 (100)
	Lower Uhl	4.825	95	15,000	Nil
	Manglad	4.53	Nil	15,000	11,000 (73)
Sorang	14.81	196	48,000	Nil	

Source: Information obtained from Divisional Forest Officers of concerned areas of the project. Figures in parenthesis indicate percentage.

As is seen from the above Table, out of 12 projects, seven projects have no achievement with regard to afforestation, while in two projects, afforestation requirement was fully met and in the remaining three projects it was between 64 and 81 *per cent* respectively. The plantation survival in Barseu and Manglad projects was reported as 90 and 100 *per cent* whereas in the remaining three projects, (Malana-I, Luni-II and Upper Awa), it ranged between 40 and 60 *per cent*. Thus, the plantation activity was highly deficient as in 58 *per cent* projects no plantation had been done as of May 2012 posing severe hazards both for natural ecology and stabilisation for hill slopes.

On this being pointed out, the concerned Divisional Forest Officers stated (April-May 2012) that due to non-receipt of sanction from the competent authority, required plantation could not be carried out. The reply is not appropriate as in 12<sup>5</sup> cases funds for afforestation were deposited by IPPs well before taking up the construction activities. The matter could have been taken up at Government level to ensure timely sanction.

In the exit conference, the Additional Chief Secretary (Multipurpose Projects and Power) assured that all the departments will be asked to do the needful.

#### 2.1.9.2 Non-adherence to prudent utility practices

(i) The Hydro Power Policy requires that the IPP should ensure minimum flow of 15 *per cent* water immediately downstream of the diversion structure of the project all times including lean season from November to March keeping in mind the fragile ecology of the environment and in addressing issues concerning riparian rights, drinking water, health, aquatic life, wild life, fisheries, silt and even to honour the sensitive religious issues like cremation and other religious rites, etc., on the river banks.

Audit noticed that in one<sup>6</sup> out of 16 operational projects selected for test-check, river beds had completely dried up and adequate flow of water for sustenance of ecology and nearby groundwater aquifers was not available as can be seen from **Photograph 2.1** below:

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Name of project	Amount (₹ in lakh)	Month/Year of Deposit
Gaj-II	5.14	January 2008
Malana-I	143.37	November 1998
Sarvari-II	16.76	December 2008
Upper Awa	1.18	2006
Balargha	9.72	June 2011
Barseu	1.33	July 2005
Brahal	5.56	April 2007
Hurla	4.77	November 2006
Luni-II	1.10	February 2012
Lower Uhl	6.99	October 2007
Manglad	8.36	May 2008
Sorang	32.99	September 2006

6 Manjhal.

**Photograph: 2.1**



**Downstream dried river bed: Manjhal Chamba District (Photograph dated 10 April 2012)**

The IPP of Manjhal stated (April 2012) that due to maintenance work downstream of trench, the water had been diverted temporarily. The reply of IPP is not convincing as it was against the provisions of Hydro Power Policy.

In three<sup>7</sup> out of 16 operational projects selected for test-check, real time online continuous flow measurement and data logging device was not installed. As such effective check over flow of water to the prescribed extent was not being exercised. In reply, the Assistant Environmental Engineer, State Pollution Control Board stated (June 2012) that notices have been issued to the concerned IPPs for installation of the said device.

(ii) As per provisions of the DPR, an additional Mild Steel (MS) pipe was proposed as spillway to discharge excess water from the spillway into adjoining stream. No spillway in Chirchind project was constructed upto the surface of adjoining stream as per provisions of DPR as can be seen from **Photograph 2.2** below:

**Photograph: 2.2**



**Photograph dated 3 April 2012 of Hydro Electric Project Chirchind-I (Chamba District): Open Spillway without MS Pipe**

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<sup>7</sup> Manjhal, Sarvari-II and Tarella-III.



The IPP of Hydro Electric Project, Chirchind intimated (April 2012) that spillway design was changed due to heavy slide on proposed desilting tank during construction. As a result of this, spillway arrangement was made through spillway tunnel leaving spill water at hard rock strata. The fact, however, remains that the requisite MS pipe upto the surface of the adjoining stream proposed as spillway was not laid.

(iii) As per the conditions of the IA, the project developer was required to execute the works in accordance with prudent utility practices. During spot inspection (April 2012) by audit team alongwith representatives of IPPs of Manjhal project, it was found that portion of the hydel channel was left uncovered. This was in violation of standard provisions of the DPR. Besides, it was also a safety hazard for the local population, animals and other wild life. The photograph of uncovered hydel channel is given in **Photograph 2.3** below:

**Photograph: 2.3**



**Uncovered hydel channel: Hydro Power Project Manjhal, Chamba District (Photograph dated 10 April 2012)**

In reply, the IPP of Manjhal stated (April 2012) that part of the hydel channel has been covered with RCC slabs and covering of the remaining portion is in progress. The reply is not acceptable as non-covering of the hydel channel resulted in non-adherence to prudent utility practices.

#### **2.1.10 Local Area Development Activities**

According to the Hydro Power Policy, the IPP is required to build such infrastructure development works<sup>8</sup> in the vicinity of the project area that may be essentially required for the benefit of local population. The expenditure on such works shall be incurred by the

<sup>8</sup> Roads, Schools, Community Hall, etc.

IPP to the extent of one *per cent* of the project cost in respect of project upto 5 (five) MW and one and half *per cent* of projects above 5 (five) MW. The amount for such developmental activities is payable during the construction period of the project in equal annual instalment in first quarter of every financial year to the Deputy Commissioner (DC) of the project affected area who has been designated as the Chairman, Local Area Development Committee (LADC).

Audit scrutiny revealed that after the Hydro Power policy was notified (December 2006), an amount of ₹ 4.96 crore was recovered between 2007 and February 2012 for local area development activities from IPPs of 14 test-checked projects. Of this, ₹ 3.22 crore was utilised upto March 2012 leaving an unspent balance of ₹ 1.74 crore with the LADC as of May 2012. The concerned Sub-Divisional Officer (Civil) stated (April 2012) that infrastructure development works could not be taken up due to non-receipt of proposals from the public.

In the exit conference, the Additional Chief Secretary (Multipurpose Projects and Power) assured that the matter will be taken up with the departments concerned.

#### **2.1.11 Fishery Development Activities**

As per amended provision of Hydro Power Policy, the IPP is to give an undertaking to the Fisheries Department of local area that wherever feasible, rearing of fish shall be promoted by the IPP, in consultation with the Fisheries Department, in the project areas at the time of final implementation of the Project. For this purpose, compensation at the rate of ₹ 0.50 lakh per km from tail race to weir of the Project and ₹ 0.50 lakh per MW was payable to the Fisheries Department for projects upto 5 (five) MW only. These provisions were, however, not applicable to projects above 5 (five) MW. The utilisation of this amount on the same stream/ Nallah or elsewhere and formulation of schemes was mandatory and to be ensured by that Department.

As per information made available by the Fisheries Department, as against the total recoverable compensation of ₹ 9.17 crore from the IPPs of 251 projects, only ₹ 6.63 crore was recovered leaving ₹ 2.54 crore unrecovered as of March 2012. In addition, the Fisheries Department had also recovered ₹ 17.48 crore on its own from IPPs of 41 projects above 5 (five) MW and 31 projects of other agencies (Central, State sector and Joint Ventures). Out of available funds of ₹ 24.11 crore, an amount of ₹ 9.04 crore only was utilised by the Fisheries Department leaving ₹ 15.07 crore unutilised as of March 2012.

Reasons for non-utilisation of funds, though called for, were not received (November 2012).

### 2.1.12 Generation of Employment to bonafide Himachalis

One of the main objectives of the Hydro Power Policy was to generate and ensure employment opportunities for bonafide Himachalis. As per provisions of the policy document, the IPPs shall provide minimum 70 per cent employment to bonafide Himachalis. To ensure compliance of the above provision, the IPP was required to provide mandatory employment related information to the Labour Department of the State.

Audit noticed that in 19<sup>9</sup> out of 34 projects selected for test-check, information relating to employment generation was neither available with the District Labour Officer of the concerned area nor was the same furnished by the concerned IPPs. In the three projects (Basp-II, Balargha and Sorang), the percentage of employment provided ranged between 44 and 49 per cent whereas in the remaining 12 projects<sup>10</sup>, employment was found to be provided to the prescribed extent. Evidently, in 65 per cent projects, the Labour Department failed to monitor the employment concerns of bonafide Himachalis and to ensure compliance of provisions relating to mandatory employment by the IPPs concerned.

In the exit conference, the Additional Chief Secretary assured (November 2012) that the Labour Department will be asked to do the needful.

### 2.1.13 Government support

One of the objectives of Hydro Power Policy is to create conducive conditions for involvement of private investors in the small hydropower projects. However, the IPPs could not ensure smooth execution of projects without any interruption from the local people even after obtaining all the mandatory clearances by the IPPs. Audit noticed that construction work of seven<sup>11</sup> projects remained stopped at various stages of construction due to non-resolution of local issues. Thus, absence of well laid down provisions in the policy and appropriate Government mechanism/ machinery to resolve the issues proved to be a major obstacle in project development from its prescribed time schedule as pointed out in paragraph 2.1.8.2 (i).

The Government stated (November 2012) that with a view to ensure the participation of the local people, the State Government has introduced various funds for the development of local area during the construction period. The reply, however, failed to explain why the local issues could not be settled in spite of these initiatives.

<sup>9</sup> Barseu, Brahal, Chirchind, Chanju-I, Chhor, Dehar-I, Diklari, Jabbal, Gaj-II, Lambadug, Lower Uhl, Luni-II, Manjhal, Sainj, Shatul, Surah, Tarela-III, Upper Awa and Upper Jointer.

<sup>10</sup> Ani, Haripur Nallah, Hurla, Jeeva Kothari, Khaniyara, Kotlu, Malana-I, Manglad, Panvi, Rukti, Sarbari-II and Tangu-Romai.

<sup>11</sup> Baran Sain, Chhor, Haripur Nallah, Moorang Angro, Sorang, Tangnoo Romai and Veena Devi.

## **Related Issues**

### **2.1.14 Utilisation of Government receipt towards departmental expenditure**

State Financial Rules provide that Government receipts cannot be utilised towards departmental expenditure and should be deposited into Government Treasury immediately after realisation. Sale proceeds of tender documents and processing fees should be treated as Government receipt and deposited into Government Treasury. Rules further provide that all the monetary transactions should be entered in the Cash Book as soon as they occur.

Scrutiny of records revealed that Government receipts aggregating ₹ 21.44 crore were realised by the Director, Energy on account of sale proceeds of tender documents and processing fee during April 2010 to March 2012. Of this, ₹ 3.06 crore was utilised towards departmental expenditure such as consultancy and technical services, purchase of furniture, computers, survey and contract works, etc., and the balance amount of ₹ 18.38 crore remained in a bank account (savings: ₹ 0.54 crore) and in the shape of fixed deposit receipts (₹ 17.84 crore). These are against the Financial Rules and may lead to financial impropriety.

In the exit conference, the Additional Chief Secretary stated (November 2012) that irregular utilisation of Government receipt will be got regularised by obtaining sanction of the Finance Department.

### **2.1.15 Monitoring**

#### **(i) Mandatory Inspection of Operational Projects**

The State's Hydro Power Policy stipulates that an agreement executed with the IPP shall remain in force upto a period of 40 years from the scheduled commercial operation date. Thereafter the project shall be reverted to the State Government free of cost and free from all encumbrances. Accordingly, the project developer is required to maintain the project assets in a condition that would ensure a residual life of the project at the rated capacity for at least 30 years at any point of time. During 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup> and 35<sup>th</sup> years of operation, the State Government should carry out a mandatory inspection of the project site.

Scrutiny of records revealed that Hydro power project, Malana-I (Installed capacity: 86 MW) in district Kullu was commissioned in July 2001 but its mandatory inspection which was due during 2011 was not carried out as of June 2012.

The Director stated (June 2012) that since the provision for quality checks for residual life of 30 years had been incorporated in 2006-07, the agreements in respect of projects commissioned prior to it did not contain this provision. The reply is not acceptable as the

matter should have been brought to the notice of the State Government for taking necessary remedial action.

The State Government stated (November 2012) that the mandatory inspections will be carried out through the consultants empanelled in September 2012. The consultants have been asked (September 2012) to conduct the inspections and submit a report within 30 days.

The reply indicates that the inspections have been delayed by more than a year. Further, the report of the consultant have also not been submitted within the stipulated time of 30 days from September 2012.

In the exit conference, the Additional Chief Secretary assured (November 2012) that mandatory inspection was underway.

**(ii) Non-creation of an authority for management of Hydro Power Project**

The Hydro Power Policy, envisages creation of an Authority of Hydro Power Project Safety, Quality Control and Management of water flow and discharge, for monitoring of construction, design of each project, management system, release of water downstream from the diversion point, besides imposing fine/ penalty for violations. It was noticed that such an authority was not established as of May 2012. Resultantly, the required checks over quality of construction and design of projects, safety and management system, release of water downstream, etc., remained to be ensured.

In reply, the State Government stated (November 2012) that a proposal with regard to creation of an authority on project safety, quality control, management of water flow, etc., is under consideration of the Directorate of Energy and being submitted for approval of the competent authority.

**(iii) Non-establishment of Multi-disciplinary Committee**

As per the Hydro Power Policy, a multi disciplinary committee (Committee) under the chairmanship of the Chief Minister was to be constituted to monitor the issues arising during the implementation of the projects such as employment related monitoring, relief and rehabilitation, review of progress of LADC's schemes, implementation of Catchment Area Treatment (CAT) plan, Compensatory Afforestation, Environmental Management Plan, Environmental Impact Assessment (EIA) plan, restoration of facilities which got damaged because of implementation of the projects, quality control mechanism of the project, etc. Besides, the Committee was also to review the progress of all statutory clearances, time and cost overruns of the projects, if any, and draw up a methodology to regulate the payments to be made by the company to the various departments of the State Government in connection with implementation of the projects. The Committee was required to meet quarterly.

Audit noticed that such Committee was not constituted in the State as of June 2012. Reasons for non-constitution of the Committee though called for (June 2012) by audit, were not furnished.

In reply, the State Government admitted the facts and stated (November 2012) that in August 2012, inter disciplinary committee to advise the State Government on issues related to Hydel Power Projects has been constituted. The fact, however, remains that Apex Committee as per Hydro Power Policy has not been established as yet.

#### **2.1.16 Conclusion**

Potential sites of small hydro power projects were identified on the basis of preliminary reconnaissance only and no system existed in the Department to conduct pre-feasibility studies to ensure realistic estimation of power potential. Implementation of hydro power projects was not efficient due to non-establishment of monitoring mechanism at Apex level under the Chairmanship of the Chief Minister. There were delays in approval of DPRs by the Department and completion of projects apparently due to non-existence of monitoring mechanism. There was no evidence of any punitive action being taken by the Government against any of the IPPs for defaulting on MOUs and IA conditions. On the whole, there was inefficiency on the part of the Government in ensuring power development through independent power producers and protection of environment and local needs of the people.

#### **2.1.17 Recommendations**

The Government may consider:

- conducting prefeasibility studies with due diligence so that reliable data can be obtained for computation of power potential of projects.
- constituting a high power Committee at the State level to monitor the issues arising during the implementation of the projects, review the progress of local area development schemes and implementation of environment management plans for overall efficient execution of projects.
- strengthening the Department/ Directorate through creation of inhouse expertise and capacity building in basic and core areas of functioning and reduce engagement of consultants.
- ensuring that the projects do not result in an adverse impact on the environment.