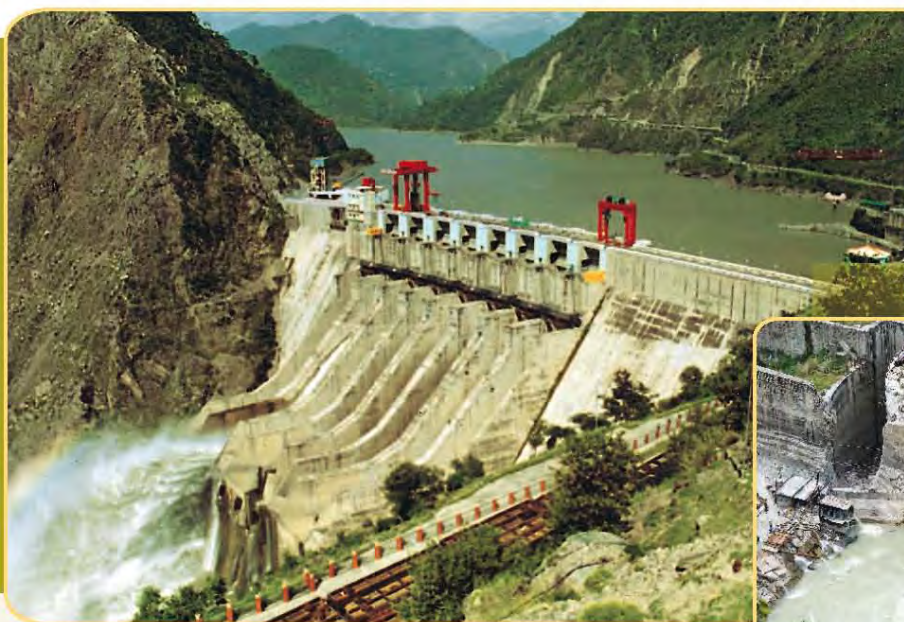


Hydro Power

POLICY 2008



MINISTRY OF POWER
Government of India



Top view of Tehri Dam of THDC

Contents

Sl. No.	PARTICULARS	PAGE No.
1	THE NEED FOR PROMOTING HYDRO POWER	1
2	OBJECTIVES OF THE HYDRO POWER POLICY	3
3	HYDRO POTENTIAL AND DEVELOPMENT STATUS	5
	3.1 Power Sector Development	
	3.2 A graphical representation of the growth profile	
	3.3 The generation growth rates achieved during X Plan	
	3.4 The Hydro Power Potential	
	3.5 First Survey (1953-59)	
	3.6 Re-assessment Studies (1978-87)	
	3.7 Status of Hydro Development	
	3.8 Schemes in Operation	
	3.9 Hydro Share	
4	PLANWISE GROWTH OF HYDRO POWER	10
	4.1 Plan wise growth of hydro power in the total installed capacity	
	4.2 Plan wise hydro capacity targets and achievements	
5	THE HYDRO POWER CAPACITY ADDITION ENVISAGED FOR 11TH AND 12TH PLAN PERIODS	12
	5.1 11 th Plan Capacity Addition Programme	
	5.2 Approach to selection of hydro projects for 11 th Plan	
	5.3 Advance action for capacity addition in the 12 th Plan	
	5.4 Long term plan for hydro development	
6	BASIN WISE DEVELOPMENT OF HYDRO POTENTIAL	16
7	POLICY INITIATIVES TAKEN FOR INCREASING THE HYDRO CAPACITY	20
	i) Electricity Act - 2003	
	ii) National Water Policy, 2005	
	iii) National Electricity Policy	
	iv) National Rehabilitation & Resettlement Policy, 2007	
	v) Provisions for Mega Power Projects	
8.	INCREASING ROLE OF PRIVATE SECTOR IN HYDROPOWER DEVELOPMENT	26
9.	NEED FOR NEW HYDRO POLICY	27
	9.1 Problems of Hydro projects with Tariff-based bidding	
	9.2 Resettlement & Rehabilitation Issues	
	9.3 Finance	

Sl. No.	PARTICULARS	PAGE No.
	9.4 River Basin Development	
	9.5 Institutional Mechanism for Co-ordination among Developers in a basin	
	9.6 Model Contract Documents	
	9.7 Ultra Mega Power Project (UMPP) model for Hydro projects	
	9.8 Need for Data	
	9.9 Capacity Building and Human Resources Development	
10.	SALIENT FEATURES OF THE NEW HYDRO POWER POLICY	33
11.	OTHER MEASURES FOR PROMOTING HYDRO POWER DEVELOPMENT	38
	11.1 Promoting Small and Mini Hydel Projects	
	11.2 Three stage approval procedure for CPSUs	
	11.3 Simplified Procedures for Transfer of Clearances	
	11.4 Technical & Safety standards specified by the Authority	
	11.5 Environmental & Forest Clearance of Hydro Projects	
	11.6 Renovation & Modernization of hydro electric power stations	
	11.7 Utilization of fly ash for construction of Hydro Projects	
	APPENDIX - Salient features of the approved R&R provisions for Hydro Power projects	45
	ANNEXURE	
	1a Status of Hydro Electric Potential Development	48
	1b Pumped Storage Schemes Identified in 1987	50
	2 Hydro Schemes in Operation	51
	3a Stationswise Installed Capacity of H.E. Stations in Pvt. Sector	64
	3b H.E. Projects Under Construction in Pvt. Sector	66
	3c H.E. Schemes allocated by States in Pvt. Sector yet to be taken up for construction	67
	3d H.E. Schemes proposed to be offered by States in Pvt. Sector	70
	4a Constitution of a Sub-Committee of the Group of Ministers on power sector issues	71
	4b Constitution of Task Force on Hydro Project Development	74
	4c Constitution of a Task Force for development of Model Contract Documents for accelerated developments of Hydro Power Projects	77
	5 Amendment of the Tariff Policy.	80

FOREWORD



Sushilkumar Shinde
Union Power Minister

While on the one hand, we are under tremendous pressure for quick capacity addition, to meet the rising demand for power, on the other hand there is a global concern on the Green House Gas (GHG) emissions by coal based power plants. In the face of this, we have to make the most appropriate choice of technology and fuel.

We are blessed with a vast hydro potential in the country. This environmentally benign source of energy is capable of providing clean and environment friendly energy at affordable rates. The energy generated from these projects not only helps in bridging the demand supply gap, but also boosts the economic development of the people of the region. The development of these projects also provides employment opportunities and raises the income generation potential for those residing in the vicinity.

In the past, several problems have impeded the development of hydro power and from time to time the Government has been taking policy initiatives to solve these problems. The New Hydro Policy recently approved by the Cabinet in Jan' 2008, is a major step in this direction. This policy seeks to balance the competing demands of all the stakeholders namely the developers, the State Governments, the consumers and most importantly the project affected people.

I am sure this New Hydro Policy-2008 would act as a catalyst in providing impetus to Hydro Power development.


(Sushilkumar Shinde)

FOREWORD



Jairam Ramesh
Union Minister of State for Power

Hydro power is our richest renewable, and environmentally benign source of energy. Hydro power stations have the inherent ability of instantaneous starting, stopping, managing load variations and help in improving the reliability of the power system. Technically, hydro stations are the best choice for meeting the peak demand.

In addition, the generation cost of hydro power is almost 'inflation free' and infact it actually reduces over time. Hydroelectric projects have long useful life in some cases extending even beyond a 100 years. These projects help in conserving scarce fossil fuels and are also beneficial to the environment as they substitute thermal power thereby reducing carbon emissions. Moreover, construction of these projects and particularly the supporting infrastructure so created helps in the opening up avenues for development for these remote and backward regions.

India has an estimated hydro potential of about 1,50,000 MW of which only about 35,220 MW has been harnessed so far. 45 Hydro projects aggregating to about 15,365 MW are presently under construction and another 120 projects aggregating to a capacity of 48,624 MW are under various stages of survey and investigation. The bulk of the potential yet to be developed is along the Himalayas i.e. in the hill States of J&K, H.P., Uttarakhand and the North East more particularly, Arunachal Pradesh and Sikkim.

It is, therefore, imperative that development of this vast potential in the Himalayan States, particularly the North-Eastern Region, is taken up expeditiously with the twin objectives of economic development of these special category states as well as providing power to the deficit regions of the country.

I am sure that the liberal provisions of this New Hydro Policy would provide the private sector players a level playing field and induce larger private investments in development of Hydro Power projects.

Jairam Ramesh
(Jairam Ramesh)

FOREWORD



Anil Razdan
Secretary, Ministry of Power

While tariff based competitive bidding remains the most preferred option for procurement of power, recognizing the fact that hydro project construction, particularly in the Northeast, involves huge risks and uncertainties, we have attempted, through this policy, to provide a level playing field to private sector hydro power developers. They can now avail of the benefits of tariff determination under section 62 of the Electricity Act 2003, at par with the CPSUs. However, while doing so due care has been exercised to ensure that additional costs, if any, incurred by the developer, beyond those permitted in the policy, would not be allowed as a pass through in tariff to the consumers.

It has also been recognized that Resettlement & Rehabilitation have to go beyond mere compensation for loss of assets and livelihood. The proposed Policy aims at providing a higher living standard to the Project Affected People by making them long term beneficiary stake-holders in the project. We have now agreed that from these hydro power projects, an additional 1% free power over and above the 12% meant for host states, would be earmarked for local area development with a matching 1% expected to come from the State Government's share of 12% free power. This would provide a regular stream of revenue aimed at providing income generation and welfare schemes and creating additional infrastructure and common facilities for the project affected people on a sustained and continued basis. With these revenue benefits it is hoped that the residents of the project affected areas would look forward to early commissioning of the projects which would provide a major input for the sustained development of the area.

We have also enabled a framework for involving the project developer in providing electricity to the local population in the vicinity of the project area.

I am sure the provisions of this policy would not only spur private sector investments in hydro power development but also garner support of the local population to assist in timely completion of hydro projects.

A handwritten signature in black ink, appearing to read 'Anil Razdan'.

(Anil Razdan)

1. THE NEED FOR PROMOTING HYDRO POWER

Hydro Power is our richest renewable and environmentally benign source of energy. Hydro power stations have the inherent ability for instantaneous starting, stopping and managing load variations which helps in improving reliability of the power system. Hydro stations are a natural choice for meeting the peak demand. The generation cost is inflation free and in fact reduces over time. A hydroelectric project has a long useful life extending to well over 50 years and helps in conserving scarce

and backward regions of the country.

Our country is endowed with an enormous hydro power potential, last assessed to be about 84,000 MW at 60% load factor, which translates to 1,48,700 MW in terms of installed capacity. In addition to the above, 6,782 MW of installed capacity has been assessed from small, mini and micro hydel schemes (i.e schemes of capacity up to 25 MW). Further, 56 potential pumped storage sites, with an aggregate installed capacity of 94,000 MW, have also been identified.

Despite being recognized as a relatively benign



Dam of 510 MW Teesta Stage-V Project of NHPC in Sikkim

fossil fuels. Development of hydro power projects also provides the added advantage of opening up avenues for development of remote

and renewable source of energy, the share of hydro power in the overall generating capacity in the country has been steadily declining since



Bhakra Dam of BBMB

1963. The hydro share has declined from 44 per cent in 1970 to about 26 per cent in 2007.

Several constraints have affected the pace of hydro power development. These have been technical (such as inadequate geological investigations, outdated tunneling methods), financial (such as non availability of long term financing and viability of tariff) and managerial (inadequate contract management expertise) in nature. Most hydro projects have been adversely affected by geological surprises especially during underground tunneling in the relatively young Himalayan mountains. Other problems

arising out of the inaccessible and remote locations of the site, delays in land acquisition and in resettlement of project affected families have also slowed down the pace of hydro power development in the country.

The Government have accorded a high priority to the development of the hydro potential and have from time to time taken a number of policy initiatives to address the issues impeding the hydro power development. This Hydro power policy is one such initiative which seeks to induce substantial private investments in Hydro power development.

2. OBJECTIVES OF THE HYDRO POWER POLICY

The programmed capacity addition from hydro projects during 11th Plan is 16553 MW, of which Central and State Sectors will contribute 9685 MW and 3605 MW respectively, and the balance 3263 MW will be contributed by the Private Sector. Based on the demand forecasts, and on the level of preparedness of various agencies, a hydro capacity addition of about 30,000 MW is envisaged during the 12th Plan.

The Government of India has set the following broad policy objectives for accelerating the pace of hydro power development:

i) Inducing private investment in Hydro power development

Lately there has been a tremendous enthusiasm among private developers in taking up sites for development of Hydro power projects. Several states have allocated sites to private developers on BOOT basis. Recognizing the inherent advantages of inflation free generation coupled with the spiraling prices of fossil fuels, both project developers and financial institutions have shown a renewed interest in investing in Hydro power projects. A greater private investment through IPPs and joint ventures is expected to be forthcoming in the years to

come and therefore a conducive atmosphere needs to be created to maintain this momentum in attracting private sector investments in this sector.

ii) Harnessing the balance hydro-electric potential

The Government has initiated advance preparatory actions for the new hydro power projects envisaged to fructify in the 12th Plan period and beyond. Towards this end, preparation of adequate Detailed Project Reports (DPRs) and measures for obtaining the basic statutory clearances etc have been initiated for the 12th plan projects. For projects further down the pipeline, emphasis is being laid on measures such as identification of new green field sites, survey and investigations and preparation of Pre-feasibility reports(PFRs).

iii) Improving Resettlement & Rehabilitation

While it is widely recognized that issues relating to resettlement and rehabilitation have been a major impediment in the development of hydro projects, it has also to be recognized that offering an effective R&R package aimed at improving people's lives will ensure greater acceptability of hydro projects, and that resettlement & rehabilitation have to go beyond mere

compensation for loss of assets and livelihood. An effective R&R Policy has to aim at providing a higher living standard to the Project Affected People making them stakeholders in the project which would be immensely beneficial for the early commissioning of the project. It has also been felt that there is a need for infusion of a regular stream of revenue aimed at providing income generation and welfare schemes and at creating additional infrastructure and common facilities on a sustained and continued basis.

iv) Facilitating Financial Viability

Keeping in view the difficulties of the hydro projects in responding to tariff based bidding, the need to develop the requisite transmission lines and also to capture the cost of generation in the most efficient manner for the benefit of all the stakeholders, it is necessary to regulate the tariff from hydro power stations. At the same time, from the point of view of the private sector the major incentive is the scope for trading – particularly in the later years when cost of generation goes down and the market price of power is high. There is a need to balance these competing interests by ensuring that a major portion of the power is

tied up through long term Power Purchase Agreements (PPAs) to facilitate financial closure of hydro projects while at the same time providing enough incentives to the developer to invest in this sector. This incentive can be by way of merchant sale, linked to the speedy commissioning of the project. Further, the long term PPAs signed between the developer and the buyers of power would facilitate timely and optimal development of transmission lines and also quick financial closure. Merchant sales in large quantities on the other hand would face constraints in transmission capacity as they utilize the redundancies in the transmission network. In order to avoid a mismatch between construction of hydel projects and availability of transmission lines, binding indemnification agreements need to be signed between the transmission utility and the private developer.



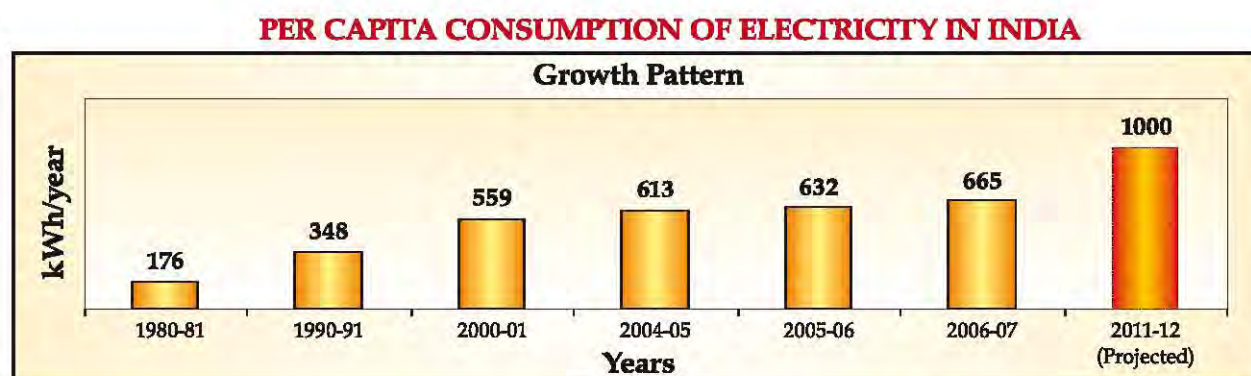
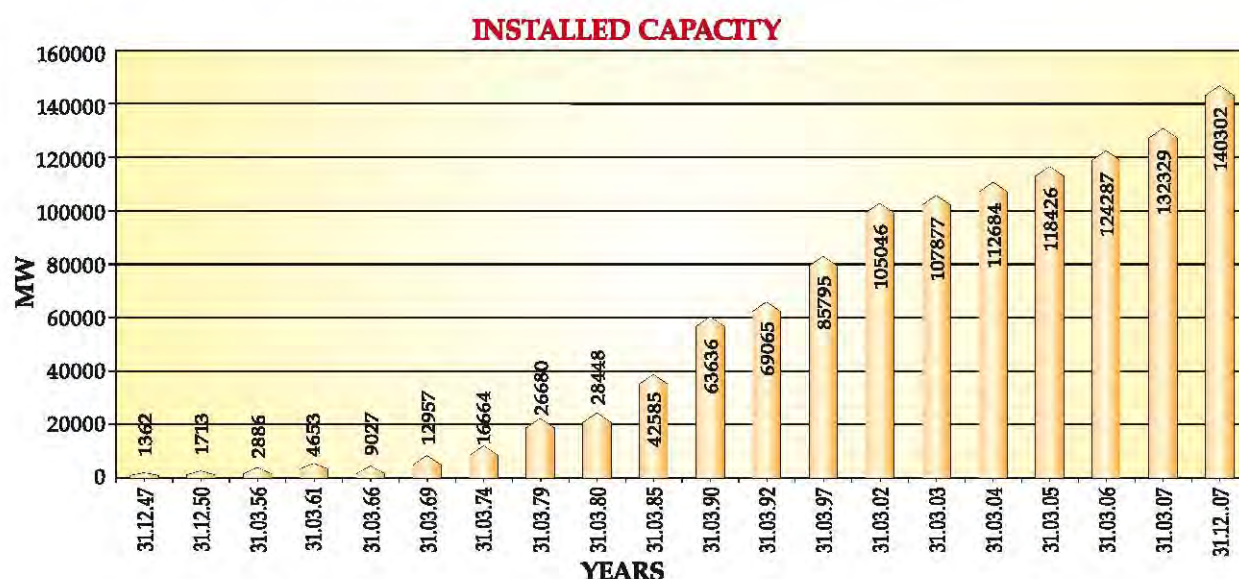
Dam & Spillway of 75 MW Doyang H.E. Project of NEEPCO in Nagaland

3. HYDRO POTENTIAL AND DEVELOPMENT STATUS

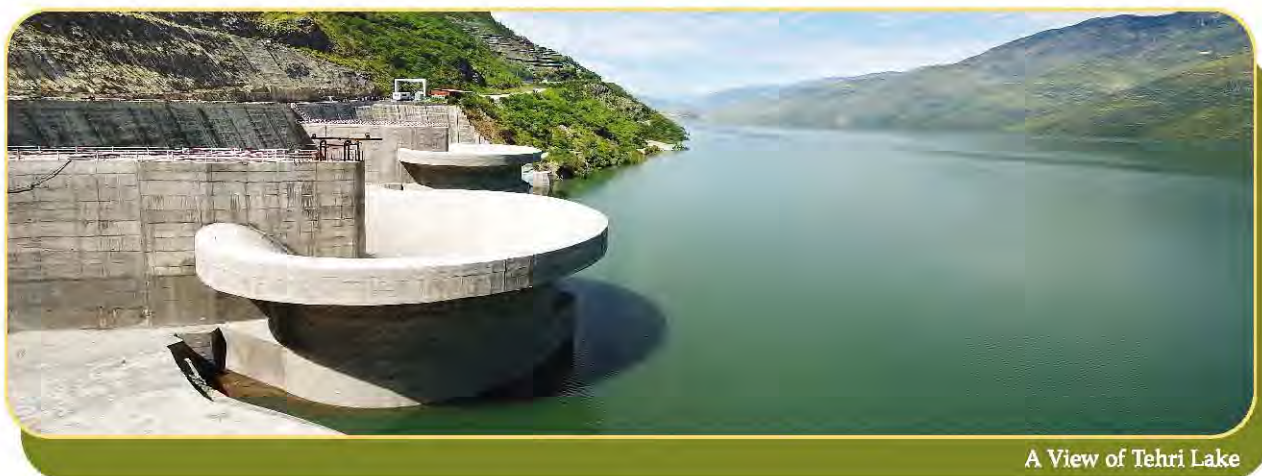
3.1 Power Sector Development:

3.2 Since independence, there has been sizeable growth in the power sector as at the time of independence the generating capacity in the country was only 1750 MW which has since increased to 1,40,302 MW as on 31.12.2007. The

annual generation has grown from about 5 billion units to 669.5 billion units during 2006-07. Despite the rapid increase in population over this period of time, the per capita consumption has increased from a mere 15 kWh to 632 kWh in 2005-06 and to 665 kWh in 2006-07, and is expected to be 1000 kWh by 2011-12. A graphical representation of the growth profile in respect of installed capacity and per capita electricity consumption is given in figures presented below:



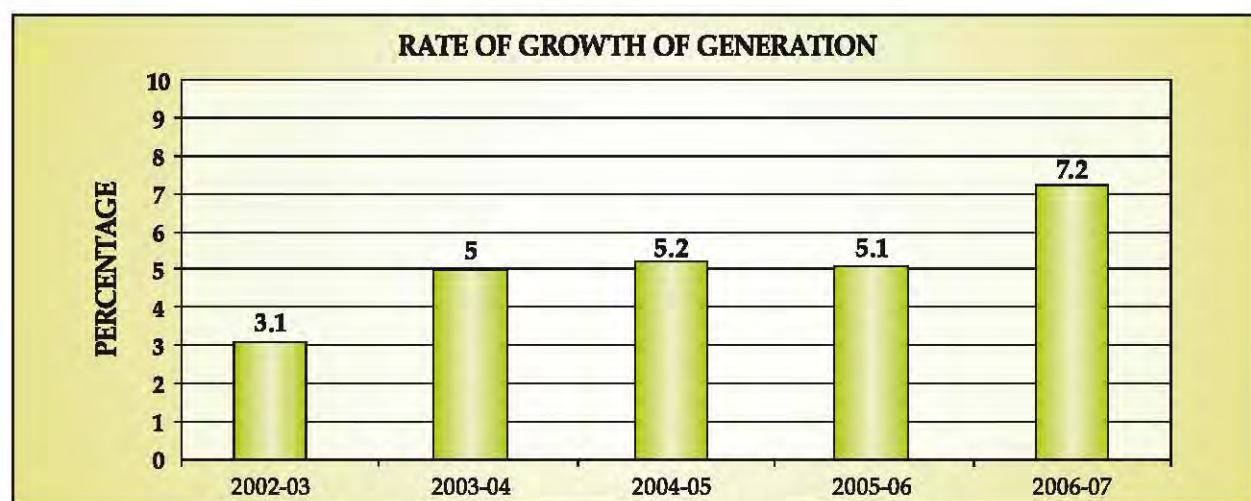
as per UN Methodology (Gross Electrical Energy Availability / Population)



A View of Tehri Lake

3.3 Despite the fact that India is the 6th largest country in terms of Power generation, the over all electricity shortages continue to be a major concern. The peaking shortages are about 13.8% as on 31.03.2007 on all India basis. The energy shortages on a regional basis vary in magnitude and the overall average shortages on all India basis is about 9.6%. To meet the growing demand and shortages encountered in various regions, the generation capacity needs to be doubled over

the next 10 years, so as to meet the total demand both in terms of peak and energy. In the wake of continuous improvements in the Plant Load Factors which recorded an average of 76.8% during 2006-07, electricity generation has been growing consistently at over 5% during past 3 years. This growth rate has peaked at 7.26% in the year 2006-07. The generation growth rates achieved during the Xth Plan (2002-07) are shown in the table below:



3.4 The Hydro Power Potential

3.5 First Survey (1953-59)

The first systematic and comprehensive study to assess the hydro-electric resources in the country was undertaken during the period 1953-1959 by the Power Wing of the erstwhile Central

Water and Power Commission on the basis of the then prevailing technology with available topographical and hydrological data. These studies placed the economically viable hydro power potential of the country at 42,100 MW at 60% load factor (corresponding to an annual energy generation of 221 billion units). The basin wise potential was assessed as below:

Basin/Rivers	Potential at 60% Load Factor (MW)
Indus	6583.00
Ganga	4817.00
Central Indian Rivers	4300.00
West Flowing Rivers	4350.00
East-flowing Rivers	8633.00
Brahmaputra	13417.00
Total :	42100.00

3.6 Re-assessment Studies (1978-87)

The re-assessment study of hydro-electric potential of the country was completed by the Central Electricity Authority in 1987. According to this study, the hydro power potential, at 60% load factor, had been estimated at 84,044 MW. This potential when fully developed would result in an installed capacity of about 150,000 MW based on the probable average load factor. A total of 845 hydro-electric schemes have been

identified in the various basins which could yield 600 billion units of electricity annually including seasonal energy.

The Great Indus, the Ganga and the Brahmaputra rivers with their innumerable tributaries originating from the Himalayas constitute about 70% of the country's assessed hydropower potential. The peninsular plateau, flanked on one side by the Eastern Ghats and on the other side by the Western Ghats is a receptacle of

enormous hydro power. The basin-wise capacities are given below:
estimated hydro potential and probable installed

Basin/River	Potential at 60% Load Factor	Probable Installed Capacity (MW)
Indus	19988	33832
Ganga	10715	20711
Central Indian Rivers	2740	4152
West-flowing Rivers	6149	9430
East-flowing Rivers	9532	14511
Brahmaputra	34920	66065
Total:	84044	148701 say 1,50,000

At present (31.12.2007), 31,439.5 MW (21.14%) of the potential has been developed and 14,177 MW (9.53%) is under development in terms of installed capacity. Thus, about 69.32% of the potential is yet to be tapped. The details are given at **Annex-1a**.

In addition, the reassessment studies have also identified 56 sites for Pumped Storage Schemes

(PSS) with total installed capacity of about 94,000 MW excluding the schemes which were under operation and under construction at that time. The details are given at **Annex-1b**. At present, Pumped Storage Schemes of 4,335 MW are under operation and 475 MW is under construction and 1000 MW is sanctioned but work is yet to start.



Tunnel Boring Machine (TBM) at NHPC's 800 MW Parbati - II Project in Himachal Pradesh



Dam of 60 MW Maithon H.E. Project of DVC in Jharkhand

3.7 Status of Hydro Development

3.8 Schemes in Operation

The installed hydro generating capacity (with station capacity above 25 MW) including pumped storage schemes in the Country is 34,680.76 MW (as on 31.12.2007). This capacity does not include small hydro capacity of 1,168 MW in respect of hydro power plants having installed generating capacity of up to 25 MW which has been transferred to Renewable Energy sources (RES) in the year 2007-08. The state wise details of hydro schemes in operation with station installed capacity above 3 MW aggregating to 35,774.10 MW, which is being monitored by CEA are given at **Annex-2**.

3.9 Hydro Share

To meet the present demand for peaking and non-peaking power, it is estimated that a hydro-thermal mix of 40:60 would be an ideal mix. At present (31.12.2007), the total installed capacity in the country is 1, 40,301.84 MW and hydro share accounts for 34,680.76 MW (24.72%) as given below:

Type of Station	Installed Capacity (MW)
Hydro	34680.76 *
Thermal	90645.84
Nuclear	4120.00
R.E.S.	10855.24 **
Total	140301.84

* Small hydro capacity of 1168 MW has been transferred to RES in the year 2007-08.

** R.E.S. includes small hydro, Biomass/ Gasifies etc.

4. PLANWISE GROWTH OF HYDRO POWER

4.1 Plan wise growth of Hydro power in the total installed capacity of the country is given as under:

PLAN WISE GROWTH AND SHARE OF HYDRO POWER

Plan Period	Installed Capacity at the end of Plan(MW)			
	Hydro Capacity Addition during the Plan(MW)	Hydro Power Installed Capacity	Total Installed Capacity including other R.E.S.	Hydro Power share as % of Total Installed Capacity
1 st Plan (1951-56)	380.19	1061.44	2886.14	36.78
2 nd Plan (1956-61)	977.18	1916.66	4653.05	41.19
3 rd Plan (1961-66)	2207.08	4123.74	9027.02	45.68
3 annual plans (1966-69)	1783.17	5906.91	12957.27	45.58
4 th Plan (1969-74)	1058.39	6965.3	16663.56	41.80
5 th Plan (1974-79)	3867.77	10833.07	26680.06	40.60
Annual Plan (1979-80)	550.90	11383.97	28447.83	40.01
6 th Plan (1980-85)	3076.05	14460.02	42584.72	33.96
7 th Plan (1985-90)	3828.41	18307.63	63636.34	28.77
2 Annual Plans (1990-92)	881.50	19194.62	69065.39	27.79
8 th Plan (1992-97)	2427.65	21644.8	85019.31	25.46
9 th Plan (1997-02)	4538.25	26261.23	103410.04	25.40
10 th Plan (2002-07)	7886.00	34653.77*	132329.21	26.19

* Includes 1168 MW of small hydro capacity which has later been transferred to Renewable Energy Sources (RES) in the year 2007-08.



Underground Power House Complex of 1500 MW Nathpa Jhakri Hydro Power Station in Himachal Pradesh

4.2 Plan wise Hydro Capacity Targets and achievements

achievements from 4th plan onwards are given as under:

The Plan wise Hydro Capacity Targets and

Plan	Target in MW (Original)	During capacity addition (MW)	% of the original achieved
4 th Plan(1969-74)	3518.00	1058.39	30.08
5 th Plan(1974-79)	4654.00	3867.77	83.11
Annual Plan(1979-80)	548.00	550.90	100.53
6 th Plan(1980-85)	4768.00	3076.05	64.51
7 th Plan(1985-90)	5541.25	3828.41	69.09
Annual Plan(1990-91)	1006.50	445.50	44.26
Annual Plan(1991-92)	754.30	436.00	57.80
8 th Plan(1992-97)	9282.15	2427.65	26.15
9 th Plan(1997-02)	9817.70	4538.25	46.23
10 th Plan(2002-07)	14393.20	7886.00	54.79

5. THE HYDRO POWER CAPACITY ADDITION ENVISAGED FOR 11TH AND 12TH PLAN PERIODS

5.1 11th Plan Capacity Addition Programme:

To meet the energy requirements of 1038 billion units and a peak load of 1, 52,746 MW with a 5% spinning reserve, a capacity addition of about 82,500 MW is required during the 11th Plan.

However, a capacity addition of 78,577 MW comprising of 39,865 MW (50.7%) in central sector, 27,952 MW (35.6%) in state sector and 10,760 MW (13.7%) in private sector has been proposed during 11th Plan. Out of this, a capacity of 16553 MW is proposed to be added from hydro projects comprising 9685 MW Central sector, 3605 MW State sector and 3263 MW Private sector. The details of the capacity addition, sector wise are as under:-

SUMMARY OF CAPACITY ADDITION PROPOSED DURING 11TH PLAN

As on 24.01.08

	Hydro	Total Thermal	Thermal Breakup				Nuclear	Total
			Coal	Lignite	Gas/LNG	Liq. Fuel		
CENTRAL SECTOR	9685	26800	24310	1000	1490	0	3380	39865
STATE SECTOR	3605	24347	23135	450	762	0	0	27952
PRIVATE SECTOR	3263	7497	5460	0	2037	0	0	10760
ALL INDIA	16553	58644	52905	1450	4289	0	3380	78577

5.2 Approach to selection of Hydro Projects for 11th Plan

India is duly concerned about climate change and efforts are being made to promote benign sources of energy. Hydro Power is one such renewable source. Irrespective of the size and nature of the hydro projects, whether ROR or Storage projects, these are all renewable sources of energy. However, execution of hydro projects

requires extensive Survey and Investigation, preparation of DPR, development of infrastructure, obtaining statutory clearances and such other preparatory works, which are time consuming and require two to three years before the projects can be taken up for construction. 5 years is the average time expected to execute a hydro project after the construction work commences. Thus in order to



Tunnel Under Construction at 120 MW Sewa-II Project of NHPC in J & K

achieve completion of a hydro project in the 11th Plan, the project should either have to be already under construction or should commence construction latest by 31st December, 2007. The broad criteria adopted for selection of hydro projects for 11th Plan is as under:

- Projects already under execution.
- Those hydro projects whose concurrence has been issued by CEA and order for works are likely to be placed by the end of 2007.
- Apart from the above, a few hydro projects of smaller capacity which are ROR type having surface power houses and where gestation period is expected to be less than 5 years have also been included. These projects would need to be rigorously followed up for completion during the 11th Plan.

In order to fulfill the Government's mission of providing power to all a detailed analysis of the status of the 11th Plan projects has been carried out with a view to tie up all requisite inputs and to remove all bottlenecks in their implementation. For each project milestones are being monitored which would ensure timely completion of the intermediate central activities. Ministry of Power and Central Electricity Authority have planned rigorous monitoring of the progress of construction of the projects.

Implementation of this large capacity would call for augmentation of manufacturing capabilities in the various input sectors. Bharat Heavy Electricals Limited (BHEL) has drawn up a plan for hydro manufacturing capacity augmentation from 1345 MW to 2500 MW with an investment

of Rs. 140 crores. BHEL also plans to further enhance its capacity as deemed necessary.

Similarly other manufacturing capacities like steel, cement, aluminum and associated equipments like large motors etc. would need to be augmented. The civil construction agencies also need large scale augmentation in their capacities, as at present there is a dearth of qualified contractors for taking up construction of large hydro power plants.

The proposed hydro capacity addition during 11th plan is 16,553 MW. Out of this, 1,647 MW capacity has already been commissioned and 12,891 MW is under construction as on 22nd January 2008.

5.3 Advance action for capacity addition in the 12th plan:

As per the studies carried out by CEA to assess the requirement of additional capacity during

the 12th Plan (2012-17), the requirement of installed capacity to meet the all India peak demand and energy requirement at the end of 12th Plan would require a capacity addition of 82200 MW in the five years period of 2012-17, out of which 30000 MW is proposed to be added through hydro Projects.

An exercise has been carried out in CEA to identify candidate projects for inclusion in the 12th Plan. 167 hydro projects of 62,541.50 MW capacity had initially been tentatively identified as candidate projects. Action has been initiated to take up/complete their survey and investigation/DPR preparation and other pre-construction activities well in advance so as to achieve the ambitious programme of capacity addition in the coming plans. Accordingly, a shelf of 101 projects with an installation of about 40,303.50 MW having better preparedness and higher degree of confidence has been short-listed. The sector-wise breakup of these hydro projects is given below:-

SECTORWISE IDENTIFIED CAPACITY FOR 12TH PLAN

Sector	Nos.	Capacity (MW)
Central	33	14535.0
State	37	16099.5
Private	31	9669.0
Total	101	40303.5

To realize the planned benefits during 12th Plan, action has been initiated to take up / complete

their survey and investigation/ DPR preparation and other pre-construction activities well in

advance so as to achieve the ambitious programme of capacity addition in the coming plans.

The present status of 12th Plan schemes is as under:

STATUS OF 12TH PLAN SCHEMES

As on 31.12.07

Sl. No.	Status of Schemes	Central		State		Private		Total	
		No	MW	No	MW	No	MW	No	MW
I	Under construction	2	89	1	120	2	1100	5	1309
II	Sanctioned but construction yet to start	1	330	2	205.5			3	535.5
III	Concurrence by CEA/TEC by state accorded but awaiting investment approval	9	2956	5	1040	2	216	16	4212
IV	DPRs ready / Prepared	9	8356	19	6563	12	2876	40	17795
V	Under S&I / DPRs to be prepared	12	2804	10	8171	15	5477	37	16452
	Total	33	14535	37	16099.5	31	9669	101	40303.5

5.4 Long term plan for hydro development

As per the re-assessment of hydro electric potential carried out by CEA (1978-87), the hydro potential of the country has been estimated

about 1,50,000 MW. The hydro installed capacity at the end of 10th Plan was 34,653.77 MW. Anticipated Hydro capacity addition during 11th (tentative), 12th, 13th & 14th Plan is projected below :

Plan Period	Hydro Capacity Addition(MW)	Total Hydro Capacity at the end of plan(MW)
11 th Plan (2007-08 to 2011-12)	16553	51207
12 th Plan (2012-13 to 2016-17)	30000	81207
13 th Plan (2017-18 to 2021-22)	31000	112207
14 th Plan (2022-23 to 2026-27)	36494	148701

It is expected that by the end of 14th Plan the entire feasible hydro potential could be exploited.

6. BASIN WISE DEVELOPMENT OF HYDRO POTENTIAL

The assessment of hydro electric potential from 845 conventional hydro projects and 56 pumped storage projects has been made on the basis of desk studies using top sheets and discharge data. By now 320 hydro electric schemes have either been developed or are under various stages of development. Further, detailed studies to firm up the parameters of the balance projects as identified by CEA would be taken up on the basis of development of hydro potential in basin as a whole for maximizing benefits and prioritizing execution of projects. These studies will be done in close co-ordination with CWC and State Authorities and in harmony with development for other uses of water like

irrigation, drinking water etc. While CEA would coordinate these studies, CPSUs / other Central Government Organizations and State Authorities / IPPs would do the investigations and prepare the detailed project reports by adopting an integrated approach towards planning and development of various projects, evacuation arrangement and environmental impact assessment. This would enable an optimal harnessing of hydro potential in each river basin. Action has already been initiated in this direction and a number of measures have been taken as deliberated in the following paragraphs.

Ranking Study

With the objective of expediting hydro power development in a systematic manner, Central



Dam of 520 MW Omkareshwar Project of NHDC in Madhya Pradesh



A View of 990 MW Dehar Power House of BBMB in Himachal Pradesh

Electricity Authority completed a ranking study of the balance hydro potential sites for all the basins in the country during 2001-02. The Ranking of hydro sites has been carried out based on weightage criteria for various aspects involved in the development of hydro schemes. Considering these aspects, the schemes have been graded in A, B and C categories in order of their priority for development.

Based on the Preliminary Ranking Study, 399

schemes with an aggregate installed capacity of about 106910 MW have been prioritized in all the six river systems of the country. Out of this, 98 schemes with probable installed capacity of 15,641 MW fall under "A" category, 247 schemes with probable installed capacity of 69,853 MW under "B" category and 54 schemes with probable installed capacity of 21,416 MW under "C" category. The basin wise details of ranking study are given below:

Sl. No	River system	Category A		Category B		Category C		Total	
		Nos.	MW	Nos.	MW	Nos.	MW	Nos.	MW
1	Indus	11	4088	51	8811	17	6080	79	18979
2	Ganga	20	2023	54	9616	1	600	75	12239
3	Central Indian	3	283	9	1425	1	186	13	1894
4	East Flowing	11	1412	26	6469	2	88	39	7969
5	West Flowing	1	35	10	958	14	1508	25	2501
6	Brahmaputra	52	7800	97	42574	19	12954	168	63328
	Total:	98	15641	247	69853	54	21416	399	106910



Dam of 1000 MW Indira Sagar Project of NHDC in Madhya Pradesh

50,000 MW Hydro Initiative

Under the 50,000 MW Hydro Initiative, 162 hydro-electric projects spreading across in 16 states for the purpose of preparation of Preliminary Feasibility Reports (PFRs) in the year 2003-04 were taken up by CEA as a nodal agency with the CPSUs / State agencies as Consultants. CEA's role included overall coordination, facilitating collection of data, and quality control by vetting conceptual planning, assessment of power benefits and selection of project parameters, evacuation of power and

monitoring of works. National Hydroelectric Power Corporation, WAPCOS, North Eastern Electric Power Corporation, Satluj Jal Vidyut Nigam and number of State Power Utilities were associated to complete these feasibility studies. The PFRs were completed in Sept., 2004 for all these projects with an aggregating capacity of 47,930 MW.

As a follow up of preparation of PFRs, it has been decided to take up implementation / preparation of DPRs for commercially viable schemes selected from the shelf of projects for execution

in the near future. Out of 162 schemes (47930 MW) for which PFRs have been prepared, initially, based on preliminary techno-economic analysis, 78 schemes (34020 MW) with first year tariff below Rs. 2.50 / kWh have been taken up for detailed survey & investigation and preparation of DPRs. One scheme in Meghalaya was not taken up for S&I due to its association with water supply scheme. Action has been initiated for 77 of these schemes (33951 MW) for S&I and preparation of DPR by CPSUs/ SPSUs/ SEBs/ IPPs. Out of these, DPRs for 17 schemes

(4060 MW) have already been prepared. The work of survey & investigation is under advanced progress for another 26 schemes (13791 MW) and their DPRs are likely to be prepared by March 2010. The work on balance 34 projects (16100 MW) is held up due to changes in agency/non allotment by the respective State Govts., non availability of statutory clearances and other issues. The details of preparation of DPRs for the entire 77 schemes under 50,000 MW H.E. initiative is as tabulated below:-

As on 31.12.2007

	Particulars	Nos.	Cap.(MW) (As per PFR)	Cap.(MW) (As per DPR)
A(i)	DPRs Prepared during 2005-06	3	1040	931
A(ii)	DPRs Prepared during 2006-07	6	1605	2046
A(iii)	DPRs Prepared during 2007-08 (up to Dec.'07)	8	1415	1933
	Sub-total(A)	17	4060	4910
B.	Schedule for preparation of Balance DPRs			
	2007-08 (Jan.'08 to March'08)	8	874	
	2008-09	15	7260	
	2009-10	3	5657	
	Sub-total(B)	26	13791	
C.	Work held up on account of:			
i)	Proposed Change in Agency/ Non Allotment by State Govt.	11	5614	
ii)	Non availability of MOEF Clearance	16	7986	
iii)	Local Agitation/ Other issues	7	2500	
	Sub-total(C)	34	16100	
	TOTAL	77	33951	

7. POLICY INITIATIVES TAKEN FOR INCREASING THE HYDRO CAPACITY

i) Electricity Act, 2003

a) Changes in Industry Structure

The Electricity Act, 2003 has come into force on 10th June, 2003 repealing the earlier Electricity Act 1910, the Electricity (Supply) Act 1948 and the Electricity Regulatory Act 1998. This act has permitted direct commercial relationships between generating companies and consumers/traders. The Act has provided a generating company the right to open access through state/central transmission utilities. The Act has also enlarged the scope of captive power plants permitting Group captive Plants wheeling power to their consumers. Reforms in the Electricity sector in the country have brought into existence many more organizations like the Central Electricity Regulatory Commission and State Regulatory Commissions. The Act has also emphasized the development of hydro power and safety of the structures including dams etc.

b) Concurrence of Hydro projects by CEA

Water and water power are state subjects and find mention under Entry 17 of List-II (State list) of the VIIth schedule of the constitution of India. However, this is subject to provisions of Entry 56

of List-I (Union list) which provides for “regulations and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of Union as declared by Parliament by law to be expedient in the public interest”. Such an enactment has not yet taken place. Although power generation has been delicensed, concurrence of CEA is still required under Section 8(1) of the Electricity Act for setting up of a hydro power generation station estimated to involve a capital expenditure exceeding such sum as may be notified by the Central Government from time to time. Presently the limit notified is as under:

1. Rupees two thousand five hundred crores, provided that-

- (a) the scheme is included in the National Electricity Plan (NEP) as notified by the Authority under sub-section (4) of Section 3 of the Act and the scheme conforms to the capacity and type (run-of-river/storage) as mentioned in the NEP, and
- (b) the site for setting up the hydro generating station has been allocated through the transparent process of bidding in accordance with guideline issued by the Central Government under Section 63 of the Act.



Tunnel Under Construction of 60 MW Loharinag - Pala H.E. Project of NTPC in Uttarakhand

2. Rupees five hundred crores for any other scheme not covered by clauses (a) and (b) above.

The CEA shall before concurring in any scheme submitted to it under sub-section (1) have particular regard to, whether or not in its opinion, :-

- (a) The proposed river-works will prejudice the prospects for the best ultimate development of the river or its tributaries for power generation, consistent with the requirements of drinking water, irrigation, navigation, flood-control, or other public purposes, and for this purpose the Authority shall satisfy itself, after consultation with

the State Government, the Central Government, or such other agencies as it may deem appropriate, that an adequate study has been made of the optimum location of dams and other river-works;

- (b) the proposed scheme meets the norms regarding dam design and safety.

For all other projects not covered by (a) and (b) above the limit is Rs. 500 crore.

The above provisions are applicable to all hydroelectric projects irrespective of State/ CPSUs/IPPs.

Ministry of Water Resources / Central Water Commission examine the following aspects of hydro electric schemes:-



Intake Structure of 412 MW Rampur H.E. Project of SJVNL in Himachal Pradesh

- Hydraulic Structures for hydropower
- Water Management
- Flood Control
- Dam Safety
- Regulation and development of inter-state rivers and river basins
- Water laws legislation
- International water laws
- The matter regarding rivers common to India and neighbouring countries : Join River Commission for Bangladesh and India, Indus Water Treaty, Indus Commission.

Accordingly, DPR of hydro electric projects are sent to Central Water Commission (CWC) for

examination on above aspects. Geological aspects of hydro electric projects are examined by Geological Survey of India.

ii) National Water Policy- 2005:

The Government has brought out a National Water Policy in the year 2005, which inter-alia, envisages that water is a prime national resource, the basic need and a precious national asset. Planning development and management of water resources need to be governed by national perspective. It has further been stipulated in the Policy that in the planning and operation of system, water allocation priority should broadly be in the order of drinking water,

irrigation, hydro power, ecology, agro industries and non agriculture industries, navigation and other uses.

iii) National Electricity Policy:

In the National Electricity Policy announced by Govt. in Feb' 2005, the following thrust areas have been identified for Hydro Generation.

- Hydroelectricity is a clean and renewable source of energy. Maximum emphasis would be laid on the full development of the feasible hydro potential in the country. The 50,000 MW hydro initiative has been already launched and is being vigorously pursued with DPRs for projects of 33,000 MW capacities already under preparation.
- Harnessing hydro potential speedily will also facilitate economic development of States, particularly North-Eastern States, Sikkim, Uttarakhand, Himachal Pradesh and J&K, since a large proportion of our hydro power potential is located in these states. The States with hydro potential need to focus on the full development of these potential at the earliest.
- Hydro projects call for comparatively larger capital investment. Therefore, debt financing of longer tenure would need to be made available for hydro projects. Central Government is committed to policies that

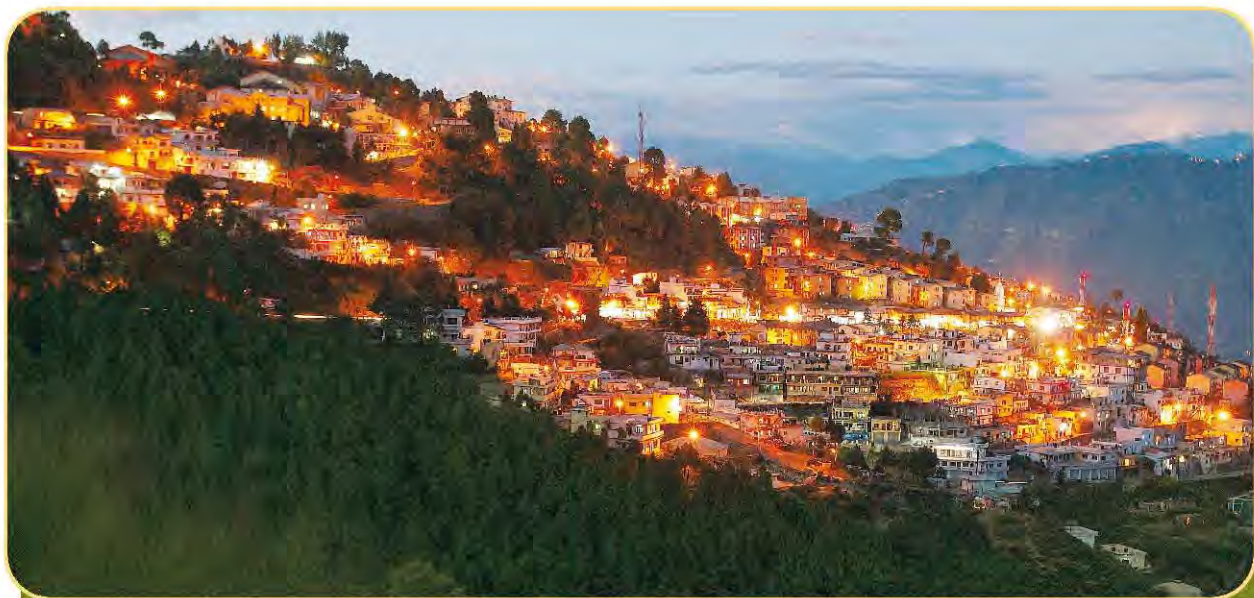
ensure financing of viable hydro projects.

- State Governments need to review procedures for land acquisition, and other approvals/clearances for speedy implementation of hydroelectric projects.
- The Central Government will support the State Governments for expeditious development of their hydroelectric projects by offering services of Central Public Sector Undertakings.
- Proper implementation of National Policy on Rehabilitation and Resettlement (R&R) would be essential in this regard so as to ensure that the concerns of project-affected families are addressed adequately.

Adequate safeguards for environmental protection with suitable mechanism for monitoring of implementation of Environmental Action Plan and R&R Schemes will be put in place.

iv) National Rehabilitation & Resettlement Policy-2007:

A National Policy on Resettlement and Rehabilitation for Project Affected Families was formulated in 2003, and it came into force w.e.f. February, 2004. Experience of Implementation of this policy indicates that there are many issues addressed by the policy which need to be reviewed. There should be a clear perception,



View of New Tehri Town

through a careful quantification of the costs and benefits that will accrue to society at large, of the desirability and justifiability of each project. The adverse impact on affected families – economic, environmental, social and cultural – needs to be assessed in a participatory and transparent manner. A national policy must apply to all projects where involuntary displacement takes place. Furthermore, such a policy must specify clear time frames within which the implementation of the rehabilitation package as well as utilization of the land shall be accomplished. Also, it should lay down an effective monitoring and grievance redressal mechanism. This necessitated the framing of National Rehabilitation and Resettlement Policy, 2007 (NRRP-2007).

The provisions of the National R&R Policy-2007 provide for the basic minimum requirements, and all projects leading to involuntary displacement of people must address the rehabilitation and resettlement issues comprehensively. The State Governments, Public Sector Undertakings or agencies, and other requiring bodies shall be at liberty to put in place greater benefit levels than those prescribed in the NRRP-2007.

The Policy addresses the need to provide succour to the assetless rural poor, support the rehabilitation efforts of the resource poor sections, namely small and marginal farmers, SCs/STs and women who have been displaced. Besides, it seeks to provide a broad canvas for an effective dialogue between the Project Affected

Families and the Administration for Resettlement & Rehabilitation to enable timely completion of project with a sense of definiteness as regards costs and adequate attention to the needs of the displaced persons. The objectives of the Policy are to minimize displacement, to plan the R&R of PAFs including special needs of Tribals and vulnerable sections, to provide better standard of living to PAFs and to facilitate harmonious relationship between the Requiring Body and PAFs through mutual cooperation.

v) Provisions for Mega Power Projects:

The threshold limit to obtain the Mega Power status is 1000 MW for Thermal and 500 MW for hydro projects. Further, the minimum threshold capacity for hydro electric projects has been

reduced from 500 MW to 350 MW for projects located in special category States such as Jammu & Kashmir, Sikkim and the North Eastern States. The corresponding threshold capacity for Thermal projects is 700 MW in these States. The import of capital equipment would be free of customs duty, and deemed export benefits as per EXIM Policy would be extended to developers of Mega Power projects both in the public and the private sector. Income tax holiday for a period of 10 years can be claimed by the promoter of a Mega Power project in any block of 10 years within 10 to 15 years. The State Governments have been requested to exempt supplies made to Mega Power Plants from sales tax and local levies. These measures and the economies of scale in Mega Projects would substantially bring down tariffs.



Dam Complex of 690 MW Salal Power Station of NHPC in J&K

8. INCREASING ROLE OF PRIVATE SECTOR IN HYDROPOWER DEVELOPMENT

Even though public sector organizations would continue to play an important role in the development of new schemes, this alone would not be adequate to develop the vast remaining hydro potential. Greater private investment through IPPs and joint ventures would be encouraged in the coming years and atmosphere conducive for attracting private sector funds would be provided.

The allocation of sites for development is under the purview of states. The policy on hydro power development lays emphasis on increasing private investment in power development. The present status of participation of private sector in hydro power development is as under:

- 21 schemes (1415.45 MW) are under operation.

- 10 schemes with an installation of 3991 MW are under construction.
- 67 schemes (18030 MW) have been allocated to private developers and
- 29 schemes (4292 MW) are under consideration for allocation.

The state wise allocation of 67 schemes to private sector developers is as under:

State	No	IC (MW)
Himachal Pradesh	8	1506
Uttarakhand	7	952
Sikkim	22	2271
Arunachal Pradesh	30	13301
Total	67	18030

The details of the schemes under operation, under construction, allotted to Private developers and those proposed to be offered by states for development in Private sector are given at **Annex- 3a, 3b, 3c & 3d** respectively.



Diversion Barrage of 400 MW Vishnuprayag H.E. Project of Jaiprakash Power Ventures Ltd. in Uttarakhand

9. NEED FOR NEW HYDRO POLICY

Speedier harnessing of the entire hydro power potential of the country requires a number of policy initiatives. In a fast-changing and dynamic sector such policy initiatives are required to be taken from time to time. While some of the issues discussed below have been addressed in the Hydro Power Policy 2008, others are at a preliminary and consultative stage and would evolve into policy measures in due course.

9.1 Problems of Hydro projects with Tariff-based bidding

With the increasing role of the private sector in hydro-power development it has become necessary to look at the specific problems that the private sector faces in developing hydro power.

Development of hydro power projects is fraught with a number of uncertainties. Broadly, the problems faced by developers can be grouped into those related to the project location, to its geology, and to issues of resettlement and rehabilitation. Typically, hydro projects are high cost, long gestation projects and are highly vulnerable to any uncertainties.

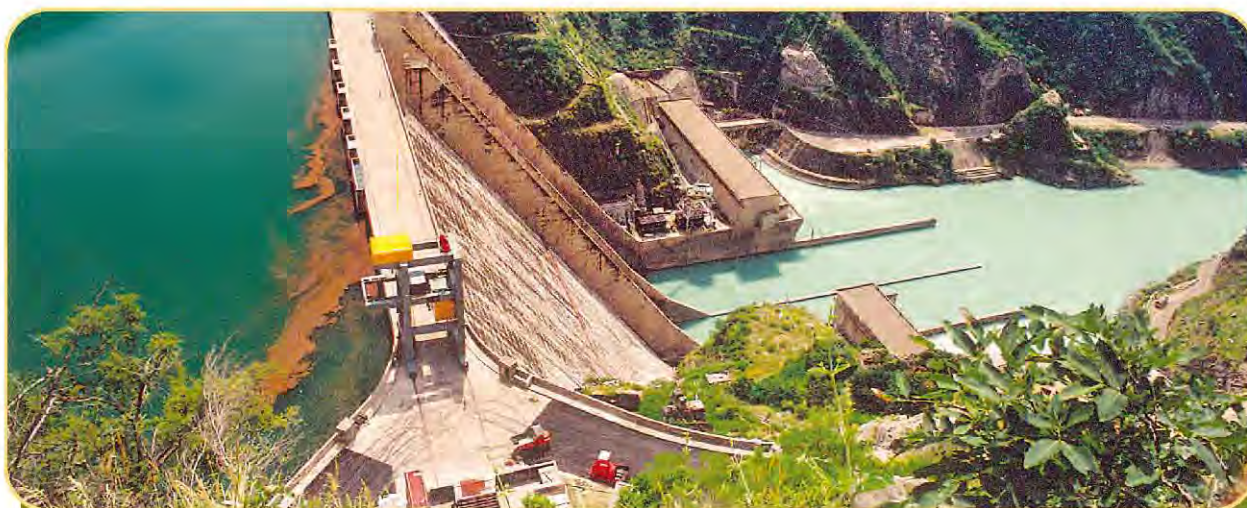
Location: Hydro projects are located in remote, inaccessible, forested and often very

inhospitable terrain. Obtaining environment forest and wildlife clearances can be very cumbersome and time-consuming. Developers are very often required to undertake infrastructure development for merely accessing the site and taking heavy machinery there. Despite the frequent landslides and slope failures often delay project implementation which in any case is slowed down by snowfall or prolonged monsoons.

Geology: Most of the hydro sites now to be developed are located in the Himalayas, which are a very young range of mountains. Even with the best of geological investigations, occurrences of shear zones and underground lakes and streams can result into serious time and cost over-runs.

Resettlement and Rehabilitation: Large-scale shifting of people from their traditional habitations and livelihoods can, if not handled with the necessary sensitivity and commitment, lead to a lot of discontentment and unrest, and hostility to the project itself. Apart from other socio-political implications, this is one major potential source for time over-runs leading to cost over-runs.

Given such uncertainties with major cost implications, it is very difficult for developers of hydro projects to participate in tariff-based competitive bidding. However, as per the Tariff Policy notified in January 2006, distribution



Panoramic view of Bhakra Dam of BBMB

utilities can procure power either through such a bidding process, or from a public sector generating company, or from the expansion of an existing project. In case of procurement of power public sector companies, the tariff would be determined by the appropriate regulator based on the capital cost. This dispensation, however, is available to the public sector only up to January 2011. Without a Power Purchase Agreement, developers would find it very difficult to achieve financial closure. Even without this problem, achieving financial closure for such high cost long gestation projects requiring long term finance, is not very easy.

Considering the uncertainties as mentioned above, the issue was to make the dispensation of regulated tariff available to the private sector hydro projects also, thereby giving them a level playing field and giving a boost to much-needed hydro projects.

9.2 Resettlement and Rehabilitation Issues

Government of India has in October 2007 notified the National Policy on Resettlement and Rehabilitation (NPRR 2007), which makes a major departure from the traditional approach to resettlement and rehabilitation. The objective now is not merely to compensate project affected persons for the loss caused to them, but actually to improve their standard and quality of life. The entire process has been made more transparent and participative.

While NPRR 2007 is applicable to all kinds of projects and lays down the minimum R & R package, there is a need to go beyond this in case of hydro projects. Just as host State governments have been turned into stake-holders by stipulating that 12% of the power is given to them free cost as a royalty, there is need to turn the

project affected areas and persons also into stake-holders with a continuing stake not only in the completion but also in the continued operation of the project. The proposed policy therefore seeks to offer a liberal and well thought-out R & R package.

9.3 Finance

Lately, financial institutions have become much more flexible and pro-active in financing power projects, particularly hydro projects. High energy prices in a fast expanding power market have diluted their insistence on water-tight PPAs backed by Government guarantees. Institutions have reiterated that there would be no dearth of funds for projects with viable tariffs promoted by credible developers. An inter-institutional group (IIG) with the MD, State Bank of India as the convenor and with representatives of other financial institutions and of the Ministry of Power has been constituted to facilitate financial closure of power projects. As opposed to thermal project, hydro projects are characterized by high capital costs but very low operational costs. Longer term finance can therefore correct the present peculiarity of high initial tariffs followed by very low subsequent tariffs.

Recently, the Group of Power Ministers under the Chairmanship of the Minister of Power has constituted a Sub-Committee on Financial

Issues under the Chairmanship of the Deputy Chairman, Planning Commission to examine and recommend policy measures for ensuring adequate and timely finance for power projects. The Sub-committee will also address the specific requirements of funding of hydro projects, and is expected to give its report soon. Composition of this Sub-Committee is at Annexure 4a.

9.4 River Basin Development

The optimum development of the hydro power potential of a river depends on a very careful study of the entire basin or sub-basin, of its topography and hydrology. Ideally, the location of sites in a cascade and the type of project to be undertaken (storage vis-à-vis run of the river) should be decided on the basis of such a study. In fact, section 8 of the Electricity Act, 2003 expects CEA to satisfy itself that an adequate study has been done of the optimum location of dams and other river-works before giving its concurrence to a project. Studies have shown that generation from even existing projects can be increased simply by constructing storage dams upstream. A proper river basin optimization study would not only enable better location of projects, but would also result in more cost-effective and co-ordinated infrastructure development in respect of roads and power evacuation.

The need for such studies was discussed in the Task Force on Hydro Power which was constituted by the Group of Power Ministers (Composition at **Annexure 4b**). It has been decided that CEA will conduct such studies with the active support of the CWC.

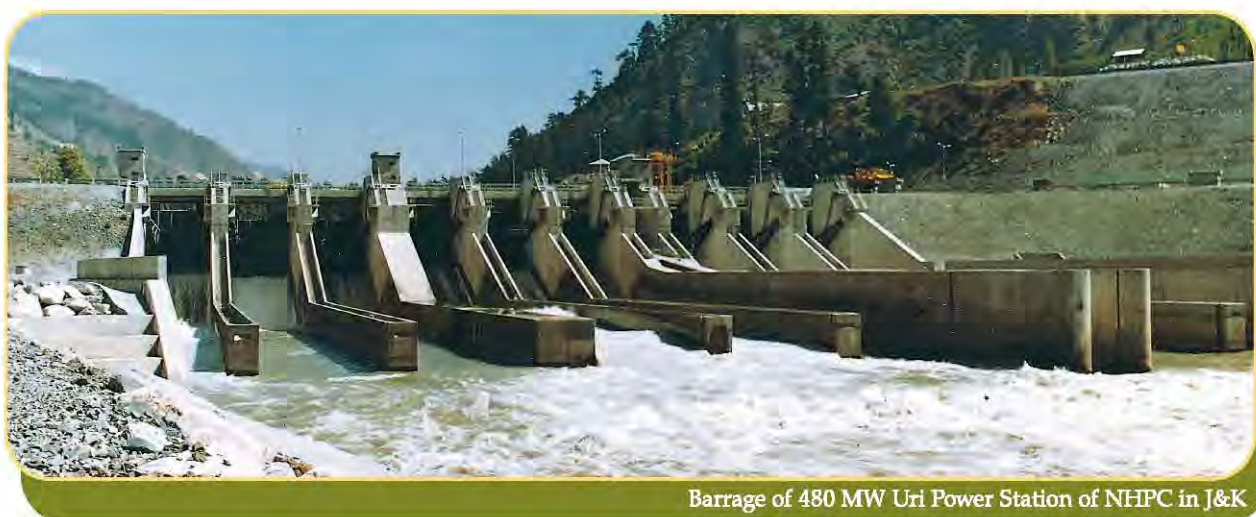
9.5 Institutional Mechanism for Co-ordination among Developers in a Basin.

Very close co-ordination and co-operation is required among developers working and operating in a river basin both during planning, implementation and operation of hydro projects. Sharing the costs of geological and hydrological data collection and of infrastructure development, proper sequencing of implementation so that infrastructure is not over-strained, and co-ordinated releases of water for optimized generation are some examples of

such co-ordination. The framework of such arrangements ranges from informal to statutory. There is need to study various practices within the country and abroad to arrive at some likely models which the States can follow within their jurisdictions. It is proposed to deliberate this and related issues in the Task Force on Hydro Power.

9.6 Model Contract Documents

It is seen that hydro projects suffer from time over-runs not only due to geological surprises but also to the developer's inability to respond to them in a timely manner. Sometimes this inadequate response is a result of ill-designed contract documents which do not allow the required flexibilities in meeting with the implementation challenges. This problem is particularly acute in respect of public sector undertakings naturally concerned about accountability issues. CEA had, in November



Barrage of 480 MW Uri Power Station of NHPC in J&K

2007, organized an international conclave on contract management for accelerated development of Indian hydropower projects in which this and related issues were deliberated. As a follow-up, the Ministry has set up a Committee under Chairman, CEA to prepare model contract documents for the use not only of public sector undertakings, but also of private developers. The composition of this committee is at **Annexure 4c**.

9.7 Ultra Mega Power Project (UMPP) model for Hydro projects

With the successful tariff-based bidding for UMPPs, suggestions have been received for replicating this model in the hydro sector also. Although tariff-based bidding is a difficult proposition for hydro projects for the reasons explained above, this issue was deliberated upon in the Task Force on Hydro Power. It was decided that a sincere effort should be made to test the concept in the hydro sector. States have accordingly been requested to identify suitable sites which they would like to offer under this model. Agencies will then be identified to prepare the DPR, obtain the necessary clearances, acquire land and to manage the bid process on the lines of the work that was done by PFC for thermal UMPPs.

9.8 Need for Data

Preparation of a good DPR is the key to timely

implementation within the estimated cost. A good DPR in turn depends to the quality of data used for preparing it-geological, geomorphologic, meteorological, hydrological and topographical, to name only a few of the kinds of data that are required. Some of this data is already available with some public agency or the other, some may be available with private agencies involved in some other project. Speedy exploitation of the hydro-power potential of the country depends to some extent on whether the required data can be made available to developers in a timely and cost-effective manner by instituting minimum but stream-lined procedures and without compromising concerns of security agencies.

As a first step towards this objective, the Pre-Feasibility Reports prepared under the 50,000 MW Initiative have now been made available in the public domain at <http://www.powermin.nic.in>. It is proposed to interact with other agencies in possession of the required data to explore ways of improving its accessibility.

9.9 Capacity Building and Human Resources Development

Human resource development and capacity building requires a comprehensive approach to develop and utilize human resource to meet the ever-growing technical needs of the hydro

power sector, more so now that there is a renewed interest in the private sector and with rapid expansion of hydro power capacities there is a likely to be dearth of experienced personnel. The demands for experienced personnel presently outstrips the supply. This is putting extra pressure on the central public sector units which are unable to match the paying capacities of the private sector and are facing higher attrition rates.

Availability of skilled manpower tailor made to deal with hydro power sector is considered as a necessary condition for expeditious harnessing of the vast untapped hydro potential in an efficient and effective manner.

The possible option to meet the growing needs of

technical manpower interalia, includes hiring the manpower with requisite skill and continuously upgrading the quality standards of the existing manpower through requisite training. The proposed rapid expansion of hydro power and consequently the power sector to match the growth rate of the Indian economy would require adequate attention to be paid to this area by drawing up comprehensive skill upgradation programmes for ensuring that local personnel gain the required skills and are channelised for being made available to meet the skilled manpower needs of the sector. Adoption of ITIs one of the possible option to channelise new recruits in the hydro power sector.

10. SALIENT FEATURES OF THE NEW HYDRO POWER POLICY

10.1 Since the above issues were not adequately addressed in the earlier Policies, the new policy guidelines outlined below seek to balance the competing interests of the various stakeholders for the sake of speedy implementation of hydro projects in the country:-

- (a) The existing dispensation available to the Public Sector under the National Tariff Policy 2006, regarding exemption from tariff based bidding up to January 2011, is also extended to private sector hydroelectric projects, which obtain CEA's concurrence, sign PPAs with distribution licensees and achieve financial closure before January, 2011.
- (b) State Governments would be required to follow a transparent procedure for awarding potential sites to the private sector. The selection criteria may include the financial strength of the developer as measured by his net worth, experience in the development of infrastructure projects of similar size, past track record in delivering projects on time and within estimated costs, turnover of the developer in relation to the size of the project, ability to meet the performance guarantees etc. This eligibility criteria will be

applicable at the RFQ stage. The States will call for bids from the short-listed developers who qualify the RFQ stage on a single quantifiable parameter identified from any of the options being exercised by the States either of more than 12% free power or equity participation or upfront payment etc.

- (c) The concerned private developer would be required to follow the existing procedure such as getting the DPR prepared, obtaining concurrence of CEA/State Government, obtaining environment, forest and other statutory clearances, and then approaching the appropriate regulator. As provided under the existing guidelines, it would be obligatory for the developer to go through an International Competitive Bidding (ICB) process for award of contract for supply of equipment and construction of the project either through a turnkey contract or through a few well-defined packages.
- (d) The tariff of the project would be decided by the appropriate Regulatory Commission. To this extent, the Tariff Policy notified in January 2006 is modified and the developer would be required to enter into long term PPAs with distribution companies subject to provisions in para 9.4.1 (g) below. While determining tariff the appropriate Regulatory Commission shall not allow as a

part of the project cost the expenditure incurred or committed to be incurred by the project developer for getting the site allotted to him. The dispensation accorded under the Hydro Policy of 1998, regarding 12% free power to be provided to the host state government, will, however, be supplemented by an additional 1% in accordance with Clause (h) below. Any free power beyond 13%, would be met by the developers from their own resources and would not be a pass through in tariff.

- (e) The project developer wishing to avail of this dispensation must reach the specific milestones – concurrence by CEA / States

and all clearances, financial closure and award of work by January 2011, and completion of the project within 4 years thereafter. Any extension to the deadline of January, 2011, if made applicable to the CPSUs under the tariff policy, shall be applicable for the aforesaid purposes to such private hydro projects also. Large storage projects and run-of-the-river projects of capacity above 500 MW could be given suitable increase with respect to construction time. This time schedule would be determined by the appropriate regulator and must be obtained before commencement of the construction.



Dam of 390 MW Dul Hasti Power Station of NHPC in J&K



View of 1000 MW Tehri Underground Power House of THDC

Independent third party verification would be done regarding adherence to the agreed timelines.

- (f) In order to enable the project developer to recover the costs incurred by him in obtaining the project site, as mentioned in para 5 above, he would be allowed a special incentive by way of merchant sales of up to a maximum of 40% of the saleable energy. Projects that do not conform to the prescribed time lines would however lose this incentive of merchant sales in a graded manner. With a view to ensure timely completion of these projects, delays of every

six months in the commissioning date would result in reduction of merchant sales by 5%. This condition would be operationalised by the appropriate regulator duly apportioning the Annual Fixed Charge accordingly.

- (g) The same policy guidelines would be applicable to projects above 100 MW capacity, which have already been allocated by various States to the private developers, if such allocations have been made in a transparent manner and on the basis of pre determined set of criteria.
- (h) An additional 1% free power from the project would be provided and earmarked for a

Local Area Development Fund, aimed at providing a regular stream of revenue for income generation and welfare schemes, creation of additional infrastructure and common facilities etc. on a sustained and continued basis over the life of the project. It is recommended that the host state governments would also provide a matching 1% from their share of 12% free power towards this corpus. This fund could be operated by a standing committee headed by an officer of the State Government, not lower than a district magistrate to be designated by the State Government, male and female representatives of the Project Affected People and the project head nominated by the developer. This fund would be available in the form of an annuity over the entire life of the project.

- (i) For a period of 10 years from the date of commissioning of the project, 100 units of electricity per month would be provided by the project developer to each Project Affected Family through the relevant distribution company. It is expected that the PAF will consume at least the minimum lifeline consumption of one unit per day and the cost of balance unused electricity, if any, could be made available to PAF in cash or kind or a combination of both, at rates to be determined by the State Electricity Regulatory Commission.

- (j) The project authorities would involve themselves in the implementation of the RGGVY Scheme within a certain radius/ surface distance from the Power House/ Dam Site as per requirement. Since the RGGVY is being funded on 90:10 (90% grant and 10% loan) basis by the Government of India. The project authorities should bear the State Governments' share of 10% of the Rajiv Gandhi Gramin Vidyutikaran Yojana within this surface distance of the Power House/ Dam.

- (k) Hydroelectric projects displace families in remote areas. In the interest of speedy implementation of hydro electric projects, the Resettlement and Rehabilitation package can be more liberal than the National Resettlement and Rehabilitation Policy, 2007. The suggested package is at Appendix.

10.2 The costs towards expenditure incurred in Sl. No (i), (j) & (k) above would be an essential part of the R&R plan and hence borne as a part of the project cost.

10.3 The 10% share of the RGGVY could be within the following surface distance from the Power House

For Projects upto 100 MW = Within a surface distance of 2 Kms.

For Projects between 100 MW = Within a surface distance of 5 Kms. and 250 MW

For Projects between 250 MW = Within a surface distance of 7.5 Kms and 500 MW

For Projects above 500 MW = Within a distance of 10 Kms.

10.4 Notification issued is at Annexure 5



Tunnel Under Construction of 520 MW Tapovan-Vishnugad H.E. Project of NTPC in Uttarakhand

11. OTHER MEASURES FOR PROMOTING HYDRO POWER DEVELOPMENT

11.1 Promoting Small and Mini Hydel Projects:

Ministry of New and Renewable Energy (MNRE) has been vested with all matters related to Small Hydel Projects (up to 25 MW capacities). These projects are being provided with the following incentives.

- i) Incentives for detailed survey & investigation and preparation of DPR.
- ii) Incentives during the execution of the project in the form of capital/interest subsidy.
- iii) Special incentives for execution of small hydro projects in the North Eastern Region by the Government departments/SEB/State agencies.
- iv) Financial support for renovation and modernization and uprating of old small hydro power stations.

Government of India proposes to provide soft loans to the projects (up to 25 MW) through IREDA/PFC/REC and other financial institutions and Ministry of Non-Conventional Energy Sources periodically announces suitable package of financial incentives for the accelerated development of Small Hydel Projects up to 25 MW station capacities.

The State Government and Central and State Hydro Corporation like NHPC / NEEPCO etc. would be encouraged to take up a cluster of small/mini hydel schemes on Build, Operate and Transfer basis, and other suitable arrangements.

11.2 Three stage approval procedure for CPSUs:

Three stage development procedures in respect of new hydro electric projects in Central Sector have been formulated in consultation with MOF/MOEF with effect from June 2001. The procedure has been found to be useful in implementation of hydro projects so far and is proposed to be continued. The outline of the scheme is given as under.

Stage-I: Expenditure on survey and investigation and preparation of pre-feasibility reports for H.E. Schemes will be sanctioned by Ministry of Power subject to the condition that proposed H.E. Project is figuring in Five Year Plan or Long-term hydro electric power development plan.

Stage-II: Stage-II development involves preparation of DPR, pre-construction work, Development of infrastructure facilities and land acquisition etc. The amount is to be sanctioned by Committee of PIB/CCEA for the project which has been found to be commercially viable and have obtained site clearance from MOEF.

Stage III: This would require approval of PIB/ CCEA for investment decision in respect of construction of H.E. Schemes.

11.3 Simplified Procedures for Transfer of Clearances:

To further streamline the process of TEC, Central Electricity Authority have issued in January, 1999 (revised in Oct., 1999) the modalities for Simplified transfer of Techno-Economic Clearance (TEC) of Hydro Electric Projects already cleared by CEA in the name of other agency as under :-

- a) For transfer of TEC in respect of schemes without any change in scheme features and cost estimates, a request for transfer of TEC by the generating company shall be made in the format prescribed by the Authority.
- b) The Authority shall examine the proposal submitted by the generating company and in case the generating company fulfilling the above requirements, the Authority shall approve the transfer of techno-economic clearance in the name of new Generating Company. Transfer of TEC in such case shall be subject to furnishing the requisite information by the new agency within one year of the transfer of TEC.
- c) For the transfer of TEC in respect of schemes with change in scheme features and cost



Dam of 300 MW Chamara -II Power Station of NHPC in Himachal Pradesh

estimates, a request for transfer of TEC by the Generating Company shall be submitted in the prescribed format.

- d) The Authority shall examine the proposal submitted by the generating company and in case the generating company fulfilling the above requirements, the Authority shall approve the transfer of techno-economic clearance in the name of new Generating Company. Transfer of TEC in such case shall be subject to furnishing the requisite information by the new agency within two years of the transfer of TEC.

11.4 Technical & Safety standards specified by the Authority:

To facilitate construction, operation and maintenance of Hydro Power, CEA has to bring out standards / norms for the same. It is essential that Hydro Projects be constructed, operated and maintained as per the relevant standards specified by the Authority under various sub sections of the section 73 of Electricity Act, 2003. A proper mechanism would be evolved for ensuring the adherence to these standards by the project Authorities so as to ensure quality construction and safety aspects.

11.5 Environmental & Forest Clearance of Hydro Projects:

Following Acts / regulations govern the Environmental Impact Assessment and

mitigation of adverse environmental impacts of multipurpose river valley / hydroelectric projects.

1. Forest (Conversations) Act, 1980 (amended in 1988), Rules and Guidelines as amended from time to time.
2. Environment (Protection) Act, 1986 with its Environment (Protection) Rules, 1986 (amended up to May, 1994). (as amended from time to time).
3. Environmental Impact Assessment Notification of 1994.
4. Amendment to Notification of 1994 (issued in 1997) (Latest vision).

11.6 Renovation & Modernization of hydro electric power stations

In the present scenario of resource constraint and to tide over the shortage of electricity in the country, Renovation, Modernization & Up rating (RM&U) of the existing old hydro electric power projects is considered an important option, as this is cost effective can be achieved quickly as compare to setting up of green field power projects.

The cost per MW of a new hydro electric power project works out to about Rs. 4 to 5 Crores whereas the cost per MW of capacity addition through up-rating and life extension of old hydro

electric power project works out to about 20% of the cost of a new hydro-electric project. Further, the R&M of a hydro project can be completed in 1 to 3 years depending upon scope of works as compared to gestation period of 5 to 6 years for new hydro project.

Recognizing the benefits of the R&M of hydroelectric power projects, Govt. of India set up a National Committee in 1987 and a Standing Committee in 1998 and have identified the projects / schemes to be taken up for implementation under R&M. The National Perspective Plan document for R&M of hydro electric power projects in the country was also prepared in C.E.A. during the year 2000, incorporating the status of various projects/ schemes already identified for implementation/ completion till the end of the XIth Plan, i.e. the year 2011-12.

Under the hydro R&M programme, 65 (15 in Central Sector and 50 in State Sector) hydro electric schemes (13 up to the VIIIth Plan, 20 in the IXth Plan & 32 in the Xth Plan) with an installed capacity of 10510.70 MW at a cost of about Rs.1,729.90 cores have been completed by the end of the Xth Plan (i.e by 31st March 2007) & have accrued a benefit of 2351.11 MW.

For the XIth Plan (2007-12), a total of 62 hydro R&M schemes having an installed capacity of about 11340 MW at an estimated cost of Rs. 4024

Crores were programmed (at the beginning of XIth Plan i.e. May / June,2007) to accrue a benefit of about 4392 MW through Life Extension, Up-rating and Restoration. During Dec., 2007 M/s. RRVPNL (Rajasthan Rajya Vidyut Prasaran Nigam Limited) declared two hydro R&M schemes of Rajasthan as closed due to non-receipt of approval from the Madhya Pradesh as the projects are Inter-State projects. Hence a total no. of 60 hydro R&M schemes are now under implementation during the XIth Plan. Out of 60 schemes, till date only one scheme of the State Sector with an installed capacity of 40 MW at a cost of about Rs.24 Crores has been completed and has accrued a benefit of 50 MW through Life Extension & Up rating and 41 schemes are On-going. On balance 18 schemes the works have yet to take off.

However, 17 nos. of hydro electric schemes having an installed capacity of 2,186.00 MW, which were originally programmed for completion during XIth Plan, have now been shifted to XIIth Plan, as utilities are not in a position either to carry out RLA studies or units cannot be stopped due to heavy demand for power. After completion of the R&M works of the balance 43 schemes projects, there would be a benefit of 1936.00 MW at an estimated cost of Rs. 845.93 Crores. (provisional).

11.7 Utilization of fly ash for construction of Hydro Projects

In exercise of the Power conferred in environmental (protection) Act 1986 and in pursuance of the orders of the Hon'ble High Court, Delhi, the Central Govt. has issued the following directions coming in force with effect from 14th Sept.'1999 and as amended in Aug.'2003:

No person shall within a radius of one hundred kilometers from coal or lignite based thermal power plants, manufacture clay bricks or tiles or blocks for use in construction activities without mixing at least 25 per cent of ash (flash, bottom ash or pond ash) with soil on weight to weight

basis or as notified by the Govt from time to time.

Every construction agency engaged in the construction of buildings shall use fly ash bricks or blocks or tiles or clay fly ash bricks or cement fly ash bricks or similar products for road construction with aggregate of them in such combinations as per the specified minimum percentage (by volume) of the total bricks, blocks and tiles, as the case may be, used in each construction project.

The above provisions shall be taken into consideration for construction of hydro projects and their infrastructural development including structures, buildings and roads etc.



Barrage of 120 MW Tanakpur Power Station of NHPC in Uttarakhand



SALIENT FEATURES OF THE APPROVED R&R PROVISIONS FOR HYDRO POWER PROJECTS.

1. SCOPE OF COVERAGE

The following provisions shall be applicable even if one family is affected by the development of a Hydro Power Project.

2. DEFINITION OF PROJECT AFFECTED FAMILIES (PAFs)

A Project Affected Family (PAF) shall mean a family whose place of residence or other property, or source of livelihood has been affected by the development of a hydro project and who have been residing in the affected zone for two years preceding the date of declaration of notification under Section-4 of LA Act. The affected family would also include squatters.

3. DEFINITION OF AGRICULTURAL LABOURER

A person normally residing in the affected zone for two years preceding the date of declaration of the affected zone and earns his / her livelihood principally by manual labour on agricultural land.

APPENDIX

4. DEFINITION OF NON AGRICULTURAL LABOURER

A person normally residing in the affected zone for two years preceding the date of declaration of the affected zone and who does not hold any land in the affected zone but earns his / her livelihood principally by manual labour or as rural artisan or a service provider to the community.

5. DEFINITION OF SQUATTERS

A family occupying government land in the affected zone without a legal title, at least for 5 years prior to the date of declaration of notification under Section-4 of L.A. Act.

6. REHABILITATION / RESETTLEMENT COLONIES

This policy aims to provide built up houses to Project Affected Families (PAFs) who get displaced due to the development of hydro projects to the extent possible. However, wherever opted for, liberal House Construction Allowance would be given in lieu.

7. TRAINING AND CAPACITY BUILDING

This policy also emphasizes the need to provide training to the Project Affected Families as well as to the local population for a sustained

livelihood. Special training programmes from ITIs aimed at providing the required skills to the local population would be undertaken by the Project developers at least six months prior to commencement of construction. This is expected to boost the employability of the PAFs and other people residing in the vicinity of the project.

8. ADDITIONAL PROVISIONS

This Policy envisages additional provisions for Project Affected Families such as:

- scholarships for meritorious students,

- extension of medical facilities,
- marriage grants,
- subsistence grants,
- support for income generation schemes for cooperatives and self help groups,
- seed, pesticides and fertilizer subsidies, and irrigation support.

Besides the additional provisions mentioned above, the normally applicable provisions of the National Policy on Rehabilitation and Resettlement, currently in force, would continue to be applicable



Upstream view of Dibang River at the proposed Dam Axis of 3000 MW Dibang Multipurpose Project of NHPC in Arunachal Pradesh

Annexure 1a

STATUS OF HYDRO ELECTRIC POTENTIAL DEVELOPMENT (In terms of Installed capacity)

As on 31.12.2007

Region/ State	Identified Capacity (as per re- assessment study) (MW)	Capacity Developed		Capacity Under Construction		Capacity Developed + Under Construction		Capacity yet be developed	
		(MW)	(%)	MW	(%)	(MW)	(%)	(MW)	(%)
NORTHERN									
Jammu & Kashmir	14146	1864.2	13.18	899.0	6.36	2763.2	19.53	11382.9	80.47
Himachal Pradesh	18820	6085.5	32.34	4435.0	23.57	10520.5	55.90	8299.6	44.10
Punjab	971	1297.7	100.00	0.0	0.00	1297.7	133.64	0.0	0.00
Haryana	64	62.4	97.50	0.0	0.00	62.4	97.50	1.6	2.50
Rajasthan	496	430.0	86.69	0.0	0.00	430.0	86.69	66.0	13.31
Uttarakhand	18175	2752.1	15.14	2154.0	11.85	4906.1	26.99	13269.0	73.01
Uttar Pradesh	723	510.2	70.57	0.0	0.00	510.2	70.57	212.8	29.43
Sub Total (NR)	53395	13001.9	24.35	7488.0	14.02	20489.9	38.37	32905.1	61.63
WESTERN									
Madhya Pradesh	2243	2438.5	108.72	400.0	17.83	2838.5	100.00	0.0	0.00
Chhattisgarh	2242	137.0	6.11	0.0	0.00	137.0	6.11	2105.0	93.89
Gujarat	619	555.0	89.66	0.0	0.00	555.0	89.66	64.0	10.34
Maharashtra	3769	2653.3	70.40	0.0	0.00	2653.3	70.40	1115.7	29.60
Goa	55	0.0	0.00	0.0	0.00	0.0	0.00	55.0	100.00
Sub Total (WR)	8928	5783.8	64.78	400.0	4.48	6183.8	69.26	2744.2	30.74
SOUTHERN									
Andhra Pradesh	4424	2017.5	45.60	404.0	9.13	2421.5	54.74	2002.5	45.26
Karnataka	6602	3448.3	52.23	230.0	3.48	3678.3	55.71	2923.7	44.29

Annexure 1a contd.

Region/ State	Identified Capacity (as per re- assessment study) (MW)	Capacity Developed		Capacity Under Construction		Capacity Developed + Under Construction		Capacity yet be developed	
		(MW)	(%)	MW	(%)	(MW)	(%)	(MW)	(%)
Kerala	3514	1838.5	52.32	160.0	4.55	1998.5	56.87	1515.5	43.13
Tamilnadu	1918	1757.5	91.63	60.0	3.13	1817.5	94.76	100.6	5.24
Sub Total (SR)	16458	9061.8	55.06	854.0	5.19	9915.8	60.25	6542.3	39.75
EASTERN									
Jharkhand	753	237.2	31.50	0.0	0.00	237.2	31.50	515.8	68.50
Bihar	70	44.9	64.14	0.0	0.00	44.9	64.14	25.1	35.86
Orissa	2999	1861.5	62.07	150.0	5.00	2011.5	67.07	987.5	32.93
West Bengal	2841	156.5	5.51	292.0	10.28	448.5	15.79	2392.5	84.21
Sikkim	4286	84.0	1.96	2309.0	53.87	2393.0	55.83	1893.0	44.17
Sub Total (ER)	10949	2389.4	21.82	2751.0	25.13	5140.4	46.95	5808.7	53.05
NORTH EASTERN									
Meghalaya	2394	185.2	7.74	84.0	3.51	269.2	11.24	2124.8	88.76
Tripura	15	15.0	100.00	0.0	0.00	15.0	100.00	0.0	0.00
Manipur	1784	105.0	5.89	0.0	0.00	105.0	5.89	1679.0	94.11
Assam	680	375.0	55.15	0.0	0.00	375.0	55.15	305.0	44.85
Nagaland	1574	99.0	6.29	0.0	0.00	99.0	6.29	1475.0	93.71
Arunachal Pradesh	50328	423.5	0.84	2600.0	5.17	3023.5	6.01	47304.5	93.99
Mizoram	2196	0.0	0.00	0.0	0.00	0.0	0.00	2196.0	100.00
Sub Total (NER)	58971	1202.7	2.04	2684.0	4.55	3886.7	6.59	55084.3	93.41
ALL INDIA	148701	31439.5	21.14	14177.0	9.53	45616.5	30.68	103084.5	69.32

Note 1 In addition to above 4335 MW PSS is under operation and another 475 MW is under construction.

Note 2 The above Table does not include schemes below 3 MW upto March, 2003 and thereafter upto 25MW under construction.

Annexure 1b

PUMPED STORAGE SCHEMES IDENTIFIED IN 1987

Sl. No.	Region / State	Probable Installed Capacity (MW)
	Northern	
1	Jammu & Kashmir	1650
2	Himachal Pradesh	3600
3	Uttar Pradesh	4035
4	Rajasthan	3780
	Sub-Total	13065
	Western	
1	Madhya Pradesh	11150
2	Maharashtra	27070
	Sub-Total	38220
	Southern	
1	Andhra Pradesh	1650
2	Karnataka	7900
3	Kerala	4400
4	Tamil Nadu	2700
	Sub-Total	16650
	Eastern Region	
1	Bihar	2800
2	Orissa	2500
3	West Bengal	3785
	Sub-Total	9085
	N. Eastern Region	
1	Manipur	4350
2	Assam	2100
3	Mizoram	10450
	Sub-Total	16900
	Total	93920

The above assessment does not include the projects which were under operation and construction at that time (1987).

Annexure 2

HYDRO SCHEMES IN OPERATION (I. C. above 3 MW)

As on 31.12.2007

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	NORTHERN REGION					
	B.B.M.B					
1	Bhakra Complex				(Combined of Bhakra I&R)	
	i) Bhakra (L)	S	5x108	540		1960, 61
	ii) Bhakra (R)	S	5x157	785	3924	1966, 68
	iii) Ganguwal	R	1x29.25 + 2x24.2	77.65	(Comb-Gang & Kot)	1952, 62
	iv) Kotla	R	1x29.25 + 2x24.2	77.65	1358	1956, 61
	Sub Total			1480.30		
2	Dehar	R	6x165	990	3110	1977-83
3	Pong	S	6x66	396	1123	1978-83
	Sub Total			1386		
	Total BBMB			2866.30		
	NHPC (NR)					
1	Baira Siul	R	3x66	198	779.28	1980, 81
2	Salal-I	R	3x115	345	3082	1987
3	Salal-II	R	3x115	345	—	1993-95
4	Tanakpur	R	3x31.4	94.2	452.19	1992
5	Chamera St.I	S(UG)	3x180	540	1664.56	1994
6	Uri	S(UG)	4x120	480	2587.38	1996
7	Chamera-II	S(UG)	3x100	300	1499.89	2003-04
8	Dhauri ganga		4x70	280	1109.58	2005
9	Dul Hasti		3x130	390	1907	2006-07
	Total NHPC (NR)			2972.20		
	SJVN (NJPC)					
1	Nathpa Jhakari	S(UG)	6x250	1500	6980	2003-04

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Total (SJVN)			1500.00		
	THDC (NR)					
1	Tehri		4x250	1000	3091	2006-07
	Total (THDC)			1000.00		
	Total Central NR			8338.50		
	Haryana					
1	WY.Canal A,B,C	R	3x2x8	48	74	1986,87,89
2	WY.Canal D	R	2x7.2	14.4	74	2004-05
	Total Haryana			62.40		
	Himachal Pradesh					
1	Giri Bata	R	2x30	60	240	1978
2	Bassi	R	4x15	60	300	1970-81
3	Sanjay	R(UG)	3x40	120	518	1989
4	Andhra	R	3x5.65	16.95	87	1987
5	Binwa	R	2x3	6	29	1984
6	Thirot	R	3x1.5	4.50	28.13	1994, 95
7	Baner	R	3x4	12	77	1996
8	Gaj	R	3x3.5	10.50	50.00	1996
9	Ghanvi	R	2x11.25	22.50	93.34	2000
10	Larji	R	3x42	126.00	—	2006-2007
11	Khauli	R	2x6	12.00	—	2006-2007
	Sub total H.P.			450.45		
	H.P. (Private)					
1	Malana	R	2x43	86	352	2001
2	Baspa-II	R	3x100	300	1213	2002-03, 03-04
	Sub total Pvt.			386		
	Total H.P.			836.45		
	Jammu & Kashmir					
1	Lower Jhelum	R	3x35	105	533	1978-79

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
2	Upper Sindh	R	2x11.3	22.60	104.00	1973-74
3	Chenani	R	5x4.66	23.30	113.00	1971-75
4	Mohara	R	2x4.5	9	79	1962
5	Gandharbal	R	2x3 +2x4.5	15	93	1955-63
6	Stakna	R	2x2	4	—	1986-87
7	Kargil	R	3x1.25	3.75	14	1995
8	Upper Sindh st-II& Extn	R	2x35+1x35	105	355	2000, 01-02
9	Chenani st-III	R	3x2.5	7.50	35.00	2000
10	Sewa-III	R	3x3	9	36	2001-02
	Total J&K			304.15		
	Punjab					
1	Shanan	R	4x15 + 1x50	110	585	1932, 82
2	U.B.D.C. St.I	R	3x15	45	(Combined I&II)	1971-73
3	U.B.D.C. St.II	R	3x15.45	46.35	320	1989-91
4	Mukerian St.I	R	3x15	45	(Comb I,II,III,IV)	1983
5	Mukerian St.II	R	3x15	45	(Comb I,II,III,IV)	1988-89
6	Mukerian St.III	R	3x19.5	58.50	(Comb I,II,III,IV)	1989
7	Mukerian St.IV	R	3x19.5	58.50	1206.00	1989
8	A.P. Sahib St.I	R	2x33.5	67	(Combined I&II)	1985
9	A.P. Sahib St.II	R	2x33.5	67	909	1985
10	Ranjit Sagar (Thein Dam)	S	4x150	600	1507	2000
	Total Punjab			1142.35		
	Rajasthan					
1	R.P. Sagar	S	4x43	172	459	1968-69
2	J. Sagar	S	3x33	99	298	1972-73
3	Mahibajaj I	R	2x25	50	(Combined I&II)	1986
4	Mahibajaj II	R	2x45	90	289	1989
5	Anoopgarh I	R	3x1.5	4.50	(Combined I&II)	1987-88
6	Anoopgarh II	R	3x1.5	4.50	52	1987-88
7	RMC Mangrol	R	3x2	6	31	1991
8	Surat Garh	R	2x2	4	14	1992

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Total Rajasthan			430		
	Uttar Pradesh					
1	Rihand	S	6x50	300	920	1962-66
2	Obra	R	3x33	99	279	1970-71
3	Matatilla	R	3x10.2	30.60	123.00	1965
4	Khara	R	3x24	72	385	1992
5	Nirgajani	R	2x2.5	5	25	1937
6	Sheetla		3x1.20	3.60		
	Total Uttar Pradesh			510.20		
	Uttarakhand					
1	Dhakrani (Y. St.I)	R	3x11.25	33.75	169	1965-70
2	Dhalipur (Y.St.II)	R	3x17	51	—	1965-70
3	Kulhal (Y. St.IV)	R	3x10	30	164	1975
4	Chibro (Y. St.II)	R (UG)	4x60	240	750	1975,76
5	Khodri (Y. St.II)	R	4x30	120	345	1984
6	Ramganga	S	3x66	198	164	1975-77
7	Chilla	R	4x36	144	725	1980-81
8	Maneribhali St.I	R	3x30	90	—	1984
9	Khatima	R	3x13.8	41.40	208.00	1955,56
10	Pathari	R	3x6.8	20.40	153.00	1955
11	Mohamadpur	R	3x3.1	9.30	—	1950
	Sub Total			977.85		
	Private JPPV					
1	Vishnu Prayag		4x100	400.00		2006-07
	Total Uttarakhand			1377.85		
	Total Northern			13001.90		
	WESTERN REGION					
	Central Sector					
1	Indira Sagar (NHDC)-MP	S	8x125	1000	2698	2003-04,04-05
2	Omkareshwar	S	8x65	520		2007-08
	Total (Central)			1520		

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Gujarat					
1	Ukai	S	4x75	300	1080	1974-76
2	Kadana	PS	4x60	240	518	1990-98
3	Ukai LBC	R	2x2.5	5	33	1987-88
4	Sardar Sarovar-CPH	R	5x50	250	5469	2002-03, 04-05
5	Sardar Sarovar-PSS	PS	6x200	1200	—	2004-05, 05-06
	Total Gujarat			1995		
	Madhya Pradesh					
1	Gandhi Sagar	S	5x23	115	420.48	1960-66
2	Bargi	S	2x45	90	508.08	1988
3	Pench	S(UG)	2x80	160	315.36	1986-87
4	Ban Sagar Tons-I	S	3x105	315	900	1990, 92
5	Birsinghpur	S		20	52	1991
6	Rajghat	S	3x15	45	87.6	1999
7	Bansagar Tons PH-III	R	3x20	60	143	2001-02, 02-03
8	Bansagar Tons PH-II	R	2x15	30	113	2001-02
9	Bansagar Tons PH-IV	R	2x10	20	—	2001-02, 02-03
10	Madhikhera	R	2x20	40	—	2001-02, 02-03, 06
	NVDA					
1	Rani Avantibai Lodi Sagar LBCH		2x5	10	—	2006
	Sub Total MP			905		
	Private (MP)					
1	Tawa(Hindustan Electra Graphite Ltd.)	R	2x6.75	13.50	63.60	
	Total MP			918.50		

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Chhattisgarh					
1	Hasdeo Bango	S	3x40	120	245	1994-95
2	Gangrel		4x2.5	10	—	
3	Siksar	R	2x3.5	7		2006-07
	Total Chhattisgarh			137		
	Maharashtra					
	M.S.E.B.					
1	Koyna I&II	S(UG)	4x70+4x80	600	3020	1962-67
2	Koyna III	S	4x80	320	—	1975-78
3	Koyna DPH	R(UG)	2x18	36	110	1980-81
4	Vaitarna	R	1x60	60	152	1976
5	Eldari	R	3x7.5	22.50	41.00	1968
6	Bhatgarh	R	1x16	16	40	1977
7	Bhira Tail Race	R	2x40	80	70	1987-88
8	Tillari	S	1x60	60	128	1986
9	Paithon	PS	1x12	12	22	1984
10	Pawana	R	1x10	10	16	1988
11	Khadakwasla - I	R	1x8	8	—	1991
12	Khadakwasla - II	R	1x8	8	—	1991
13	Bhatsa	R	1x15	15	63	1991
14	Vir	R	2x4.5	9	31	1975
15	Radhanagari	R	4x1.2	4.80	6.00	1951
16	Kanher	R	1x4	4	16	1991
17	Ujjaini	PS	1x12	12	22	1993
18	Manikdoh	R	1x6	6	21	1995
19	Surya *	R	1x6	6	21	1996
20	Dimwe	R	1x5	5	—	1997
21	Warna	R	2x8	16	38	1997-98
22	Dudhganga	S	2x12	24	57	1999-00
23	Koyana St-IV	S	4x250	1000	—	1999-00
	Sub Total Maharashtra			2334.30		

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Private					
1	Bandhardhara-I(Lindblon Hydro Project Ltd.)	R	1x12	12	49	1986
2	Bandhardhara-II (Lindblon Hydro Project Ltd.)	R	1x34	34	49	2007
				46.00		
	Tata (Pvt.)					
1	Bhira	S	6x25	150	—	1927(5),1950
2	Bhivpuri	S	3x24+2x1.5	75	220	1921-24
3	Khopoli	S	6x12	72	190	1914-26
4	Bhira PSS	PS	1x150	150	790	1995
	Sub Total Pvt.			447		
	Total Maharashtra			2827.30		
	Total Western Region			7397.80		
	<i>SOUTHERN REGION</i>					
	Andhra Pradesh					
1	Machkund	S	3x17 + 3x21.25	114.75	670	1955-59
2	Upper Sileru I	S	2x60	120	(Combined I&II)	1967-68
3	Upper Sileru St.II	R	2x60	120	529	1994-95
4	Lower Sileru	S	4x115	460	1070	1976-78
5	T.B.Dam	S	4x9	36	236	1957-64
6	Hampi	S	4x9	36	—	1958-64
7	N.J. Sagar	PS	1x110 + 7x100.8	815.60	2237.00	1978-85
8	Srisaillam RB	S	7x110	770	2900	1982-87
9	N.J. Sagar RBC	R	2x30	60	(CombRBC & extn)	1983
10	N.J. Sagar RBC Ext.	R	1x30	30	156	1990
11	N.J. Sagar LBC	R	2x30	60	104	1991, 92
12	Donkarayi	R	1x25	25	98	1983
13	Pochampad	R	3x9	27	147	1987, 88
14	Nizam Sagar	R	2x5	10	22	1956

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
15	Penna Ahobilam	R	2x10	20	54	1994
16	Singur	R	2x7.5	15	49	1999-00
17	Srisaïlam LBPH	PS	6x150	900	1400	2000-03, 03-04
	Sub Total AP			3619.35		
	Private (AP)					
1	Guntur		3x1.25	3.75		
	Total AP			3623.10		
	Karnataka (KPCL)					
1	Sharavathy	S	2x89.1+8x103.5	1006.20	4932.00	1964-77
2	Lingnamakki	S	2x27.5	55	254	1979-80
3	Bhadra (L)	R	1x2+2x12	26	(Comb L,R&RBC)	1962-63
4	Bhadra (R)	R	1x7.2	7.20	(Comb L,R&RBC)	1963
5	Bhadra (RBC)	R	1x6	6	123	1998
6	Kalinadi	S	3x135+3x150	855	3385	1979-84
7	Supa DPH	S	2x50	100	542	1985
8	Varahi	S(UG)	2x115	230	1060	1989, 90
9	Ghatprabha	R	2x16	32	131	1992
10	Mani DPH	R	2x4.5	9	40	1993
11	Mallapur	R	2x4.5	9	51	1993-94
12	Kalinadi st II (Kadra)	S	3x50	150	570	1997, 99
13	Kalinadi st II (Kodasil)	S	3x40	120	3385	1998, 99
14	Sharavathy TR	R	4x60	240	3385	2000-02
15	Almatti dam	S	1x15+5x55	290	483	2003-04, 05
	Total (KPCL)			3135.40		
	Karnataka (KEB)					
1	Jog	S	4x13.2+4x21.6	139.20	118.00	1947-52
2	Sivasamudram	R	6x3+4x6	42	183	1922, 34
3	Shimsapura	R	2x8.6	17.20	69.00	1938, 40
4	Munirabad	R	2x9+1x10.3	28.30	66.00	1962-65
	Total (KEB)			226.70		

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
	Karnataka (Pvt.)					
1	Shivpur	R	2x9	18	100	1992
2	Shahapur	R	4x1.3+1x1.4	6.60	28.00	
3	Narayanpur	R	2x5.8	11.60	34.00	
4	Harangi	R	2x4.5	9	24.5	
5	Madhavamantri	R	3x1.5	4.50	24.00	
6	Mandagare		2x1.75	3.50	15.00	
7	Nerie (Bhoruka Power Corpn.)		2x4.5	9	—	2007
8	Chhaya Devi (— Do —)		2x12	24	—	2007
	Total Pvt.			86		
	Total Karnataka			3448.30		
	Kerala					
1	Idukki	S(UG)	6x130	780	2398	1976 & 1985-86
2	Sabaragiri	S	6x50	300	1338	1966-67
3	Kuttiadi	S	3x25	75	268	1972
4	Sholoyar	S	3x18	54	233	1966-68
5	Sengulam	R	4x12	48	182	1954, 55
6	Nariamanglam	R	3x15	45	237	1961-63
7	Pallivasal	R	3x5 +3x7.5	37.50	284.00	1940-51
8	Poringalkuttu	R	4x8	32	170	1957-60
9	Panniar	S	2x15	30	158	1963-64
10	Idamalayar	S	2x37.5	75	380	1987
11	Kallada	R	2x7.5	15	65	1993-94
12	Lower Periyar	R	3x60	180	493	1996-97
13	Poringalkuthu	R	1x16	16	74	1999
14	Kakkad	R	2x25	50	262	1999
15	Kuttiyadi Extn	R	1x50	50	75	2001
16	Chammukadaru - II		3x1.25	3.75	9.72	
17	Urmi-I		3x1.25	3.75	9.72	

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
18	Malankara		3x3.50	10.50	65.35	
	Sub Total Kerala			1805.50		
	Kerala (Pvt)					
1	Maniyar		3x12	12	35	
2	Kuthungal			21	79	
	Total Kerala (Pvt.)			33		
	Grand Total Kerala			1838.50		
	Tamilnadu					
1	Kundah I	S	3x20	60	(Comb'd I to V)	1960-64
2	Kundah II	S	5x35	175	(Comb'd I to V)	1960-64
3	Kundah III	S	3x60	180	(Comb'd I to V)	1965-78
4	Kundah IV	S	2x50	100	(Comb'd I to V)	1966-78
5	Kundah V	S	2x20	40	1387	1964 & 88
6	Mettur Dam	S	4x10	40	(Mett Dam & Tunl.)	1937-46
7	Mettur Tunnel	S	4x50	200	541	1965-66
8	Periyar	S	4x35	140	409	1958-65
9	Kodayar I	S	1x60	60	(Comb'd I & II)	1970
10	Kodayar II	S	1x40	40	165	1971
11	Sholayar I	S	2x35	70	(Comb'd I & II)	1971
12	Sholayar II	S	1x25	25	254	1971
13	Pykara	S	3x6.65+2x14+1x11	58.95	274	1932, 54
14	Aliyar	S	1x60	60	175	1970
15	Sarkarpathy	R	1x30	30	162	1966
16	Papanasam	R	4x7	28	105	1944-51
17	Moyar	R	3x12	36	115	1952-53
18	Suruliyar	S	1x35	35	79	1978
19	Servalar	S	1x20	20	50	1986
20	LowerMettur. PH-1	R	2x15	30	(Comb'd I to IV)	1988
21	LowerMettur. PH-2	R	2x15	30	(Comb'd I to IV)	1988
22	LowerMettur. PH-3	R	2x15	30	(Comb'd I to IV)	1987-88
23	LowerMettur. PH-4	R	2x15	30	252	1988-89

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
24	Kadamparai	PS(UG)	4x100	400	77	1987-88
25	Vaigai Dam	S	2x3	6	22	1990
26	Lower Bhavani	R	2x4	8	51	1990
27	Sathanur Dam	S	1x7.5	7.50	22.00	1999
28	Parson's Valley (Kundah VI)	S	1x30	30	53	2000
29	Lower Bhawani dam RBC	R	2x4	8	51	
30	Pykara Ulimite		3x50	150	—	2005-06
31	Bhawani Barrage-I		2x15	30		2005-06
	Total Tamil Nadu			2157.45		
	Total Southern Region			11067.35		
	<i>EASTERN REGION</i>					
	Bihar					
1	Kosi	R	4x5	20	88	1970-78
2	Sone Western Canal	R	4x1.65	6.60	32.00	1993
3	Eastern Gandak	R	3x5	15	108	1994-97
4	Sone Eastern	R	2x1.65	3.30	20.00	1996
	Total Bihar			44.90		
	Jharkhand					
1	Subernrekha I	S	1x65	65	(Comb'd I & II)	1977
2	Subernrekha II	S	1x65	65	149	1980
	Total Jharkhand			130		
	D.V.C.					
1	Maithon	S(UG)	2x20+1x23.2	63.20	137.00	1957-58
2	Panchet & Extn.	PS	2x40	80	237	1959 & 90
3	Tilayia	S	2x2	4	23	1953
	Total D.V.C.			147.20		
	Orissa					
1	Hirakud I (Burla)	S	3x37.5+ 2x49.5+2x24	259.50	1174.00	1956-63, 90
2	Hirakud II (Chiplima)	R	3x24	72	—	1962-64
3	Balimela	S	6x60	360	1183	1973-77

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
4	Rengali	S	5x50	250	525	1985-92
5	Upper Kolab	S	4x80	320	832	1988-93
6	Upper Indravati	S	4x150	600	1962	1999, 2000-01
	Total Orissa			1861.50		
	Sikkim					
1	Lower Lagyap	R	2x6	12	48	1979
2	Upper Rognichu	R	4x2	8	20	1993-94
3	Moyangchu	R	2x2	4	45	1993
	Sub Total Sikkim			24		
	NHPC					
1	Rangit-III (Sikkim)	R	3x20	60	339	1999
	Sub Total - NHPC			60		
	Total Sikkim			84		
	West Bengal					
1	Jaldhaka I	R	3x9	27	(Comb'd I & II)	1967, 72
2	Jaldhaka II	R	2x4	8	169.6	1983
3	Massanjore	R	2x2	4	50	1956
4	Rammam II	R	4x12.5	50	209	1995-96
5	Teesta Falls	R	3x7.5+3x7.5+3x7.5	67.50	319.00	1997-00
6	Purlia PSS	PSS	3x225	675	319.00	2007-08
	Total West Bengal			831.50		2007-08
	Andaman & Nicobar					
1	Kalpong		5.25	5.25	13	2001-02
	Sub Total A&N			5.25		
	Total Eastern			3104.35		
	<i>NORTH-EASTERN REGION</i>					
	Arunachal Pradesh					
1	Tago	R	3x1.5	4.50	32.00	1991
2	Nuranang	R	3x2	6	43	1997
3	Ranganadi (NEEPCO)	S	3x135	405	1509.66	2001-02

Annexure 2 contd.

Sl. No.	Region/Sector	Type	No. of Units x Capacity	Capacity (MW)	Design Energy (MU)	Year of Commissioning
4	Kambang		2x2	4		2007
5	Sippi		2x2	4	1509.66	2007
	Total Ar.Pradesh			423.50		
	Meghalaya					
1	Kyrdemkulai	R	2x30	60	118	1979
2	Umiam St.I	S	2x9+2x9	36	128	1965
3	Umiam St.II	S	2x9	18	—	1970
4	Umtru	R	4x2.8	11.20	64.00	1957
5	Umiam-Umtru St.IV	S	2x30	60	324	1992
	Total Meghalaya			185.20		
	Nagaland					
1	Likim-Ro	R	3x8	24	137	2001-02
2	Doyang (NEEPCO)	S	3x25	75	227.24	2000-01
	Total Nagaland			99		
	Tripura					
1	Gumti	S	3x5	15	38	1976-84
	Total Tripura			15		
	Assam					
	NEEPCO					
1	Khandong	S	3x25	75	363.95	1984
2	Kopili	S	2x50	100	(Comb Kop&Ext)	1988
3	Kopili Extn	S	2x50	100	1186.14	1996-97
4	Karbi Langpi (APGC)	R	2x50	100		2007
	Total NEEPCO			375		
	Manipur					
	NHPC					
1	Loktak	S	3x35	105	450	1983
	Total			105		
	Total North Eastern			1202.70		
	Total All India			35774.10		

Annexure 3a

STATIONWISE INSTALLED CAPACITY OF H.E. STATIONS IN PRIVATE SECTOR

(As on 31.12.2007)

	Station	No. of Units X Size (MW)	No. of Stations	No. of Units	Capacity (MW)
	HIMACHAL PRADESH				
	MALANA POWER COMPANY LTD.				
1	MALANA	2 x 43	1	2	86.00
	JAIPRAKASH HYDRO POWER LTD.				
1	BASPA-II	3 x 100	1	3	300.00
	TOTAL H.P.		2	5	386.00
	UTTARAKHAND				
	JAIPRAKASH POWER VENTURE LTD.(JPVL)				
1	VISHNUPRAYAG	4 x 100	1	4	400.00
	MADHYA PRADESH				
	HINDUSTAN ELECTRIC GRAPHITE LTD.				
1	TAWA	2 x 6.75	1	2	13.50
	MAHARASHTRA				
	TATA POWER COMPANY				
1	BHIRA	6 x 25	1	6	150.00
2	BHIVPURI	3 x 24+2 x 1.5	1	5	75.00
3	KHOPOLI	3 x 24	1	3	72.00
4	BHIRA PSS	1 x 150	1	1	150.00
	TOTAL TATA HYDRO		4	15	447.00
	DODSON-LINDBLOM				
	HYDRO POWER PVT. LTD. (DLHP)				
1	BANDHARDHARA - I	1 x 12	1	1	12.00
2	BANDHARDHARA - II	1 x 34	1	1	34.00

Annexure 3a contd.

	Station	No. of Units x Size (MW)	No. of Stations	No. of Units	Capacity (MW)
	TOTAL DLHP		2	2	46.00
	TOTAL MAHARASHTRA		6	17	493.00
	ANDHRA PRADESH				
1	GUNTUR	3 x 1.25	1	3	3.75
	KARNATAKA				
	BHORUKA POWER CORPORATION LTD. (PVT.)				
1	SHIVAPUR	2 x 9	1	2	18.00
2	SHAHAPUR	4 x 1.3+1 x 1.4	1	5	6.60
3	MADHAVAMANTRI	3 x 1.5	1	3	4.50
4	MANDAGERE	2 x 1.75	1	2	3.50
5	NERIA	2 x 4.5	1	2	9.00
6	CHAYADEVI	2 x 12	1	2	24.00
	SUB TOTAL (BPCL)		6	16	65.60
	MURDESHWAR POWER COPORATION LTD.(PVT.)				
1	NARAYANPUR	2 x 5.8	1	2	11.60
	ENERGY DEVELOPMENT CORPORATION LTD.(PVT.)				
1	HARANGI	2 x 4.5	1	2	9.00
	TOTAL KARNATAKA		8	20	86.20
	KERALA				
	CARBORUNDUM UNIVERSAL LTD. (PVT.)				
1	MANIYAR	3 x 4	1	3	12.00
	INDSIL ELECTROSMELTS LTD. (PVT.)				
1	KUTHUNGAL	3 x 7	1	3	21.00
	TOTAL KERALA		2	6	33.00
	TOTAL ALL INDIA		21	57	1415.45

Note:- (1) Station capacity upto 3 MW not included. (2) Uprated/derated Capacities of units have been incorporated.

Annexure 3b
H.E. PROJECTS UNDER CONSTRUCTION PVT. SECTOR

(As on 31.12.2007)

	State / Station	No. of Stations	Capacity (MW)
	HIMACHAL PRADESH		
	JAIPRAKASH HYDRO POWER LTD.		
1	Karcham Wangtoo	1	1000.00
	A D HYDRO POWER LTD.		
2	Allain Duhangan	1	192.00
	EVEREST POWER		
3	Malana-II	1	100.00
	LANCO		
4	Budhil	1	70.00
	HP SORANG POWER CO.		
5	Sorang	1	100.00
	TOTAL HIMACHAL PRADESH	5	1462.00
	UTTARAKHAND		
	ALAKNANDA POWER CO. (TATA)		
6	Srinagar	1	330.00
	TOTAL UTTARAKHAND	1	330.00
	MADHYA PRADESH		
	S. KUMAR		
7	Maheshwar	1	400.00
	TOTAL MADHYA PRADESH	1	400.00
	SIKKIM		
	TEESTA URJA LTD.		
8	Teesta-III	1	1200.00
9	Teesta-VI	1	500.00
	GATI LTD.		
10	Chujachen	1	99.00
	TOTAL SIKKIM	3	1799.00
	TOTAL ALL INDIA	10	3991.00

Annexure 3c

Hydro Electric Schemes allocated by States in Private Sector yet to be taken up for construction

(As on 31.12.2007)

Sl. No.	Name of Project	Agency	Installed Capacity (MW)
Himachal Pradesh			
1	Paudital Lassa	Jayalaxmi Private Ltd.	36
2	Tangnu Romai	Nuzivedu Seeds Pvt. Ltd./ PCP International	44
3	Tidong-I	Nuzivedu Seeds Pvt. Ltd./ PCP International	100
4	Harsar	Soffimat,France	60
5	Bharmour	Soffimat,France	45
6	Jangi Thopan	Brakal Corp.	480
7	Thopan Powari	Brakal Corp.	481
8	Kutehr	D.S. Constructions Ltd.	260
		Total	1506
Uttarakhand			
1	Badrinath (Alaknanda)	GMR Energy Ltd	140
2	Urthing Sobla	Reliance Energy Ltd., Mumbai	280
3	Mapang Bogudiyar	GVK-L&T Ltd.	200
4	Bogudiar Sarkaribhyol	GVK-L&T Ltd.	170
5	Honal Tuni	Sunflag Industries Ltd.	42
6	Mori Hanol	Krishna Technologies Ltd	60
7	Singoli Bhatwari	L&T Ltd.	60
		Total	952
Sikkim			
1	Teesta-I	Himalayan Green Energy Pvt. Ltd., New Delhi	280
2	Teesta-II	Him Urja Pvt. Ltd., New Delhi	330
3	Panan	Himgiri Hydro Energy Pvt. Ltd., Hyderabad	280
4	Rangyong	GVK Industries Ltd. , Hyderabad	117
5	Rongichu Storage	Madhya Bharat Power Corporation Ltd.	96

Annexure 3c contd.

Sl. No.	Name of Project	Agency	Installed Capacity (MW)
6	Sada Mangder	Gati Infrastructures Ltd., Hyderabad	71
7	Bhasmey	Gati Infrastructures Ltd., Hyderabad	32
8	Rolep	Amalgamated Transfer India Ltd., New Delhi	36
9	Chakhungchu	Amalgamated Transfer India Ltd., New Delhi	50
10	Ralong	Amalgamated Transfer India Ltd., New Delhi	40
11	Rangit-II	Sikkim Ventures Pvt. Ltd, Mumbai	60
12	Rangit-IV	Jal Power Corporation Ltd., Hyderabad	120
13	Dikchu	Sneha Kinetic Power Projects Ltd., Hyderabad	96
14	Jorethang Loop	DANS Energy Pvt. Ltd., New Delhi	96
15	Lingza	Punj Llyod Ltd., New Delhi	120
16	Thangchi	Lachung Power Pvt. Ltd., New Delhi	40
17	Bimkyong	Teesta Power Pvt. Ltd., New Delhi	99
18	Bop	Chungthang Power Pvt. Ltd., New Delhi	90
19	Ting Ting	SMEC Pvt. Ltd., New Delhi	70
20	Rateychu - Bakchachu	Coastal Projects Pvt. Ltd.	40
21	Rukel	Madhya Bharat Power Corporation Ltd.	33
22	Talem	Shyam Energy Ltd.	75
		Total	2271
Arunachal Pradesh			
1	Naying	D.S. Constructions Ltd.	1000
2	Tato-II	Reliance Energy Ltd.	700
3	Hirong	Jaiprakash Associates Ltd.	500
4	Siang Lower	Jaiprakash Associates Ltd.	1600
5	Siang Middle(Siyom)	Reliance Energy Ltd.	1000
6	Kameng-II(Bhareli-II)	Mountain Falls (India) Ltd.	600
7	Hutong-II	Mountain Falls (India) Ltd.	1250
8	Kalai-I	Mountain Falls (India) Ltd.	1450
9	Nyamjunchhu-I	Bhilwara Energy Ltd.	98

Annexure 3c contd.

Sl. No.	Name of Project	Agency	Installed Capacity (MW)
10	Nyamjunchhu-II	Bhilwara Energy Ltd.	97
11	Nyamjunchhu-III	Bhilwara Energy Ltd.	95
12	Dibbin	KSK Electricity Financing India Pvt. Ltd.	125
13	Talong	GMR Energy Ltd.	160
14	Kameng Dam	KSK Electricity Financing India Pvt. Ltd.	600
15	Demwe	Athena Energy Ventures Pvt. Ltd.	3000
16	Gongri HEP	Patel Engineering Ltd.	90
17	Khuitam HEP	Adishankar Power Pvt. Ltd.	29
18	Turu HEP	ECI Engineering & Construction Co. Ltd.	90
19	Utung HEP	KSK Electricity Financing India Pvt. Ltd.	100
20	Nazong HEP	KSK Electricity Financing India Pvt. Ltd.	60
21	Dionchang HEP	KSK Electricity Financing India Pvt. Ltd.	90
22	Nafra	SEW Energy	96
23	Pank	Vilcon Energy Ltd.	50
24	Heo	Vilcon Energy Ltd.	90
25	Tato-I	Vilcon Energy Ltd.	80
26	Hirit	Vilcon Energy Ltd.	84
27	Phanchung	Indiabull Real Estate Ltd.	60
28	Pichang	Indiabull Real Estate Ltd.	31
29	Tarang Warang	Indiabull Real Estate Ltd.	30
30	Sepla	Indiabull Real Estate Ltd.	46
		Total	13301
		Grand Total	18030
		Total Schemes - 67	

Annexure 3d

Hydro Electric Schemes proposed to be offered by States in Private Sector

(As on 31.12.2007)

Sl. No.	Name of Project	Agency	Installed Capacity (MW)
Himachal Pradesh			
1	Tidong-II	Global Bids invited in Nov'05. Allotment Awaited.	60
2	Khoksar	Global Bids invited in Nov'05. Allotment Awaited.	90
3	Gharopa	Global Bids invited in Nov'05. Allotment Awaited.	99
4	Chamba	Global Bids invited in Nov'05. Allotment Awaited.	126
5	Yangthang Khab	Global Bids invited in Jan'06. Allotment Awaited.	261
6	Bara Bhangel	Global Bids invited in Jan'06. Allotment Awaited.	200
7	Bajoli Holi	Global Bids invited in Jan'06. Allotment Awaited.	180
8	Gondhala	Global Bids invited in Jan'06. Allotment Awaited.	144
9	Bardang	Global Bids invited in Jan'06. Allotment Awaited.	114
10	Chhatru	Global Bids invited in Jan'06. Allotment Awaited.	108
11	Mane Nadang	Global Bids invited in Jan'06. Allotment Awaited.	70
12	Lara	Global Bids invited in Jan'06. Allotment Awaited.	60
13	Ropa	Global Bids invited in Jan'06. Allotment Awaited.	60
14	Kuling Lara	Global Bids invited in Jan'06. Allotment Awaited.	40
15	Miyar	Global Bids invited in Jan'06. Allotment Awaited.	90
16	Tinget	Global Bids invited in Jan'06. Allotment Awaited.	81
17	Teling	Global Bids invited in Jan'06. Allotment Awaited.	61
18	Patam	Global Bids invited in Jan'06. Allotment Awaited.	60
19	Rupin	Global Bids invited in Jan'06. Allotment Awaited.	39
20	Chango Yangthang	Global Bids invited in Jan'06. Allotment Awaited.	140
21	Sumte Kothang	Global Bids invited in Jan'06. Allotment Awaited.	130
22	Lara Sumta	Global Bids invited in Jan'06. Allotment Awaited.	104
23	Reoli	Global Bids invited in Jan'06. Allotment Awaited.	715
24	Dugar	Global Bids invited in Jan'06. Allotment Awaited.	360
25	Gyspa	Global Bids invited in Jan'06. Allotment Awaited.	240
26	Sach-Khas	Global Bids invited in Jan'06. Allotment Awaited.	210
27	Seli	Global Bids invited in Jan'06. Allotment Awaited.	150
28	Tandi	Global Bids invited in Jan'06. Allotment Awaited.	150
29	Rashil	Global Bids invited in Jan'06. Allotment Awaited.	150
		Grand Total	4292
		Total Schemes - 29	

F.No. 6/3/2007-Fin.
GOVERNMENT OF INDIA
MINISTRY OF POWER

New Delhi, dated the 31st August, 2007

Subject : Constitution of a Sub-Committee of the Group of Ministers on power sector issues.

The Chairman of the Group of Ministers on power sector issues has constituted a Sub-Committee of the Group of Ministers to look at financing issues including up-gradation of transmission and distribution networks. The constitution of the Sub-Committee will be under:-

Deputy Chairman, Planning Commission	-	Chairman
Minister of Power, Govt. of Andhra Pradesh	-	Member
Minister of Power, Govt. of Assam	-	Member
Minister of Power, Govt. of Maharashtra	-	Member
Minister of Power, Govt. of Orissa	-	Member
Minister of Power, Govt. of Uttar Pradesh	-	Member
Secretary, Financial Sector	-	Convenor

Permanent Invitees

Secretary, Ministry of Power

Chairperson, Central Electricity Authority

Chairman & Managing Director, Power Finance Corporation Ltd.

The Terms of Reference of this Sub-Committee will be as follows:

To make appropriate recommendations on various issues to ensure timely availability of funds for achieving the target of attaining a capacity addition of about 80,000 MW in the XI Plan, initiating action on XII Plan projects, and providing electricity to all households by 2012, with particular reference to issues such as –

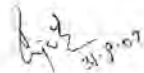
- (i) Constraints of state power utilities and private sector utilities/ companies in securing funds;
- (ii) Re-defining exposure limits, wherever necessary;
- (iii) Identifying the specific needs of transmission, sub transmission and distribution;

Annexure 4a contd.

- (iv) Indicating broad policy measures and instruments for mobilizing long tenure finances for meeting investment requirements of the sector, particularly the hydroelectric projects; and
- (v) The possibility of including power funding under priority sector lending.

The Sub-Committee may consult any Ministry or Department or Institution of the Government of India.

The Sub Committee will submit its recommendations to the Group of Ministers on power sector issues within a period of three months.



(Rajesh Verma)

Joint Secretary & FA (Power)

Tele: 23710171

To

Shri Sushilkumar Shinde, Minister of Power.

Shri Montek Singh Ahluwalia, Deputy Chairman, Planning Commission.

Shri Vilas Muttemwar, Minister of State (Independent Charge), Ministry of New and Renewable Energy.

Power Ministers of all State Government and Union Territories.

Administrators of the Union Territories of Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, and Lakshadweep.

Secretary, Financial Sector, Ministry of Finance

Secretary, Ministry of Power.

Chairperson, Central Electricity Authority.

Chairman & Managing Director, Power Finance Corporation Ltd.

Copy forwarded for information to:-

Principal Secretary to the Prime Minister.

Cabinet Secretary [w.r.t. Cab. Secretariat's No. 521/2/3/2007-Cab. dated 17-07-2007].

Member-Secretary, Planning Commission.

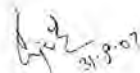
Secretary, Department of Expenditure.

Secretary, Department of Economic Affairs.

Secretary, Department of Revenue.

Annexure 4a contd.

Secretary, Department of Heavy Industry.
Secretary, Ministry of Petroleum & Natural Gas.
Secretary, Ministry of New and Renewable Energy.
Secretary, Ministry of Environment & Forests.
Secretary, Department of Atomic Energy.
Secretary, Department of Legal Affairs.

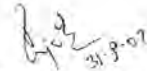


(Rajesh Verma)

Joint Secretary & FA (Power)

Copy also forwarded to:-

Additional Secretary (AK), Additional Secretary (AKK), Ministry of Power.
Joint Secretary (GBP), Joint Secretary (JK), Joint Secretary (DS), Joint Secretary (VPJ), Ministry of Power.



(Rajesh Verma)

Joint Secretary & FA (Power)

Annexure 4b

No. 37/18/2007-H-II

GOVERNMENT OF INDIA MINISTRY OF POWER

Shram Shakti Bhawan, Rafi Marg,
New Delhi dated the 3rd September, 2007.

Subject: Constitution of Task Force on Hydro Project Development.

In pursuance of the decision taken at the Conference of Chief Ministers, chaired by the Hon'ble Prime Minister at New Delhi on May 28, 2007, it has been decided to constitute a Sub Committee of the Standing Group of Power Ministers called the **Task Force on Hydro Project Development**, to look into all issues relating to development of hydropower including issues of rehabilitation and resettlement of project affected persons. The constitution of the Task Force shall be as follows :-

Minister of Power	:	Chairman
Dy. Chairman / Planning Commission	:	Co-Chairman
Minister of New & Renewable Energy, GoI	:	Member
Minister of Environment & Forest, GoI	:	Permanent Invitee
Minister of Water Resources, GoI	:	"
Minister of Rural Development, GoI	:	"
Minister of Power, Jammu & Kashmir	:	Member
Minister of Power, Himachal Pradesh	:	"
Minister of Power, Uttarakhand	:	"
Minister of Power, Sikkim	:	"
Minister of Power, Arunachal Pradesh	:	"
Minister of Power, Rajasthan	:	"
Minister of Power, West Bengal	:	"
Minister of Power, Assam	:	"
Member Power, Planning Commission	:	Permanent Invitee

Annexure 4b contd.

Secretary, Water Resources	:	Permanent Invitee
Secretary, Environment & Forests	:	"
Chairperson, CEA	:	"
Chairman, CWC	:	"
CMDs of NHPC, SJVNL, THDC, NEEPCO	:	"
Secretary (Power), Government of India	:	Convenor
Joint Secretary (Hydro), Ministry of Power	:	Joint Convenor

The Term of Reference of the Task Force shall be as follows :

Examine and resolve all issues relating to hydro power development such as allocation of sites and clearances required for development of hydro projects, forest, environment and wild – life issues, compensation to host state, land acquisition, rehabilitation & resettlement issues, sharing costs and benefits of power generation, water storage, navigation and flood moderation of hydro power projects with States downstream of storage projects.

The above order issues with the approval of the Minister of Power.



(Jayant Kawale)

Joint Secretary to Government of India

To

1. Dr. A.R. Sihag, Joint Secretary, Cabinet Secretariat, Rashtrapati Bhawan, New Delhi – 110004.
2. Prime Minister's Office, (Ms. Vini Mahajan, Joint Secretary), South Block, New Delhi.
3. PS to Minister of Power
4. PS to Dy. Chairman / Planning Commission.
5. PS to Minister of New & Renewable Energy, GoI
6. PS to Minister of Environment & Forest, GoI
7. PS to Minister of Water Resources, GoI

Annexure 4b contd.

8. PS to Minister of Rural Development, Gol
9. PS to Minister of Power, Jammu & Kashmir
10. PS to Minister of Power, Himachal Pradesh
11. PS to Minister of Power, Uttarakhand
12. PS to Minister of Power, Sikkim
13. PS to Minister of Power, Arunachal Pradesh
14. PS to Minister of Power, Rajasthan
15. PS to Minister of Power, West Bengal
16. PS to Minister of Power, Assam
17. Member Power, Planning Commission
18. Secretary, Ministry of Water Resources
19. Secretary, Ministry of Environment & Forests
20. PS to Chairperson, CEA
21. PS to Chairman, CWC
22. PS to CMDs of NHPC, SJVNL, THDC, NEEPCO
23. PPS to Secretary (Power), Ministry of Power
24. PS to all Addl. Secretaries / Joint Secretaries, Ministry of Power
25. PS to Joint Secretary (Hydro), Ministry of Power
26. Director (H-II), Ministry of Power

No37/43/2007-H-II
GOVERNMENT OF INDIA
MINISTRY OF POWER

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the March 10, 2008

ORDER

**Subject: Constitution of a Task Force for development of Model Contract Documents
for accelerated developments of Hydro Power Projects**

It has been agreed to constitute a Task Force for development of Model Contract Documents for accelerated development of Hydro Power Projects. The constitution of the Task Force would be as follows:-

- | | | | |
|-------|--|---|----------|
| i) | Chairperson, Central Electricity Authority(CEA) | : | Chairman |
| ii) | Member(Hydro), Central Electricity Authority | : | Member |
| iii) | Joint Secretary(Hydro), Ministry of Power | : | Member |
| iv) | CMDs of all CPSUs development Hydro Projects -
NTPC, NHPC, THDC, NEEPCO and SJVNL | : | Member |
| v) | CMD, Power Finance Corporation | : | Member |
| vi) | One State representative from each Region viz. Secretary, Power/Energy
Deptt., Govt. of HP, Arunachal Pradesh, Sikkim, MP and Karnataka | : | Member |
| vii) | IPPs/Developers – Sh. A.B. Giri, CEO & Director, Malana Power Co. | : | Member |
| viii) | IPPs/Developers – Sh. R.K. Sharma, Energy Infratech Limited | : | Member |
| ix) | Construction agencies` representative – Dr. D.G. Kadkade,
Senior Advisor Jaiprakash Associates Ltd. | : | Member |
| x) | Construction agencies` representative – Sh. N. Raghavan Vice President
Hydro Larson & Toubro Ltd. | : | Member |
| xi) | Secretary, Central Board of Irrigation and Power | : | Member |
| xii) | Construction Industry Development Council (CIDC) -
Sh. P.R. Swarup, Director General | : | Member |

Annexure 4c contd.

- xiii) Representative of consultant – Mr. John C.W. Ritchie,
Director(Engg), M/s Hatch : Member
- xiv) Representative from Central Water Commission : Member
- xv) Lawyer/Solicitor – Sh. P.K. Malhotra, JS&GC, Ministry of Law & Justice : Member
- xvi) Chief Engineer (HPM), Central Electricity Authority : Member Secretary
2. The Task Force will recommend for formulation of a set of Model Contract Documents which could be adopted uniformly by hydro project developers. The Task Force will get the following set of documents prepared which will serve as guidelines for adoption by all agencies associated with development of Hydro Projects:-
- i) Standard bidding document Guidelines
 - ii) Works Manual Guidelines
 - iii) Arbitration Manual Guidelines
 - iv) Schedule of rates and construction cost indices Guidelines
 - v) Guidelines for grading of construction agencies
3. Chairman, CEA vide letter No.290/1/HPM/2007/2288 dated 28.11.2007 has suggested to appoint M/s Construction Industry Development Council (CIDC) as consultant for drafting the documents as CIDC has been set up jointly by the Planning Commission, Government of India and the Indian construction industry and has experience in developing of similar documents. The CIDC will carry out the work on the basis of reimbursement of actual cost.
4. The schedule of completion of aforesaid work may be completed in a time frame manner as indicated hereunder:-
- i) Holding of first meeting of Task Force after its formation 2 weeks
 - ii) Initial draft preparation 3 months
 - iii) Finalisation & issue of Guidelines 3 months
 - Total** 6 ½ months
5. The CEA have estimated the cost of development of above guidelines is to be about Rs.30 lakhs. They have proposed that the expenditure may be shared by all the CPSUs represented in the

Annexure 4c contd.

Task Force in equal proportion. The PFC may coordinate the financing of the scheme with other CPSUs.

This issues with the approval of Secretary(Power).



(Ajit Kumar)

Under Secretary to the Govt. of India

Tel : 23714169, Email : ajit.uspower@yahoo.com

To

1. The Chairperson, CEA, Sewa Bhawan, R.K. Puram, New Delhi with reference to their U.O.No.290/1/HPM/2007/2288 dated 28.11.2007
2. All members (including all CMDs of hydro CPSUs)
3. Sr. PPS to Secretary(Power)/PS to JS(H)/Director(H), Ministry of Power
4. Concerned Desks in the Ministry of Power
5. Guard File



भारत का राजपत्र The Gazette of India

असाधारण
EXTRAORDINARY
भाग I—खण्ड 1
PART I—Section 1
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 123]
No. 123]

नई दिल्ली, सोमवार, मार्च 31, 2008/चैत्र 11, 1930
NEW DELHI, MONDAY, MARCH 31, 2008/CHAITRA 11, 1930

विद्युत मंत्रालय

संकल्प

नई दिल्ली, 31 मार्च, 2008

फा. सं.23/2/2005—आर एण्ड आर (खण्ड IV)— विद्युत अधिनियम, 2003 की धारा 3 के प्रावधानों के अंतर्गत टैरिफ नीति अधिसूचित करने संबंधी भारत के राजपत्र (असाधारण) भाग—I खण्ड I में प्रकाशित इस मंत्रालय के संकल्प फाइल सं० 23.02.2005—आर एण्ड आर (खण्ड III) दिनांक 6 जनवरी 2006 में निम्न संशोधन किए जाते हैं।

टैरिफ नीति के पैरा 5.1 के अंत में निम्नलिखित परन्तुक जोड़ा गया है:

“बशर्ते कि जल विद्युत परियोजना जो कि राज्य के नियंत्रण/स्वामित्व वाली कंपनी न हो, के विकासकर्ता को सेवा विनियमों की कार्यनिष्पादन आधारित लागत के आधार पर उपयुक्त आयोग द्वारा टैरिफ निर्धारित कराने का विकल्प होगा यदि निम्नलिखित शर्तों को पूरा कर लिया जाता है।

- (क) उपयुक्त आयोग संतुष्ट है कि एक पारदर्शी द्वि-स्तरीय प्रक्रिया अपनाने के पश्चात संबंधित राज्य सरकार द्वारा विकासकर्ता को परियोजना स्थल आवंटित किया गया है। प्रक्रिया का प्रथम स्तर पूर्व अहर्ता हेतु निम्न मानदण्डों के आधार पर होना चाहिए जैसे कि निवल मूल्य द्वारा मापी गई वित्तीय क्षमता, समान आकार की अवसंरचनात्मक परियोजनाओं को विकसित करने का विगत अनुभव टर्न-ओवर कार्यनिष्पादन गारन्टी को पूरा करने की योग्यता इत्यादि। दूसरे स्तर पर केवल एक सकल मात्रानिर्धारक पैरामीटर यथा 13% से अधिक निःशुल्क विद्युत, राज्य सरकार को प्रदान की गई इक्विटी भागीदारी अथवा अग्रिम भुगतान इत्यादि के आधार पर बोलियां आमंत्रित की जाए।

Annexure 5 contd.

- (ख) 100 मे. वा. डिजाइन क्षमता से अधिक की परियोजनाओं, जिनके लिए स्थलों का आवंटन एक परदर्शी मानदण्ड प्रक्रिया अपनाकर और पूर्व निर्धारित मानदंड के आधार पर की गई है, को भी इस व्यवस्था में सम्मिलित किया जाएगा।
- (ग) के.वि.प्रा. की स्वीकृति (यदि अधिनियम की धारा 8 के तहत अपेक्षित हो) वित्तीय समापन, कार्य सौंपना, वितरण लाइसेंस धारियों के साथ नीचे (घ) में निर्धारित क्षमता का दीर्घकालीन पीपीए (35 वर्षों से अधिक) 31.12.2010 तक पूरे कर लिए जाएं।
- (घ) दीर्घावधि पीपीए कुल विक्रय योग्य डिजाइन ऊर्जा का कम से कम 80% होगा। किंतु 60% तक के इस आंकड़े में निर्माण के आरंभ होने से पूर्व उपयुक्त आयोग द्वारा अनुमोदित निर्धारित तारीख की तुलना में परियोजना की अंतिम यूनिट के शुरू होने में प्रत्येक 6 माह के विलंब के लिए 5% तक की वृद्धि होगी। परियोजना के सभी यूनिटों को शुरू करने के लिए समयावधि उपयुक्त आयोग द्वारा आरंभिक सूची के अनुमोदन की तारीख से 4 वर्ष होगी। किंतु, उपयुक्त आयोग कारणों को लेखाबद्ध करने के पश्चात् बड़ी स्टोरेज परियोजनाओं तथा 500 मेगावाट क्षमता से अधिक की रन-ऑफ-दि-रिवर परियोजनाओं के लिए लंबी समयावधि निर्धारित कर सकेगा। चालू करने के निर्धारित समय की प्राप्ति हेतु सहमत समय-सीमाओं के अनुसरण की जांच स्वतंत्र तृतीय पक्ष जांच के माध्यम से की जाएगी।
- (ङ) उपकरण की आपूर्ति एवं परियोजना के निर्माण के लिए ठेका सौंपने का कार्य, या तो टर्न-की के माध्यम से अथवा सुप्रभावित पैकेजों के माध्यम से अंतर्राष्ट्रीय प्रतियोगी बोली के आधार पर किया जाता है।
- उन मामलों में, जहां उपरोक्त (क) से (ङ) में वर्णित शर्तें पूरी की जाती हैं, उपयुक्त आयोग निम्नलिखित को सुनिश्चित करते हुए टैरिफ निर्धारित करेगा:-
- (i) परियोजना स्थल आबंटित करने (13% तक की निःशुल्क विद्युत के अलावा) के लिए परियोजना विकासकर्ता द्वारा वहन किए गए अथवा वहन किए जाने के लिए प्रतिबद्ध कोई व्यय न तो परियोजना लागत में शामिल किया जाएगा और न ही इस प्रकार का कोई व्यय की टैरिफ में शामिल किया जाएगा।
- (ii) परियोजना लागत में निम्नलिखित शामिल होगा-
परियोजना की अनुमोदित आर एंड आर योजना की लागत निम्नलिखित के अनुसार होगी :
- (क) वर्तमान में मान्य राष्ट्रीय पुनर्वास एवं पुनर्स्थापन नीति।
- (ख) आर एंड और पैकेज जैसा कि परिशिष्ट के रूप में संलग्न है।
- विद्युत मंत्रालय मंजूर की गई परियोजना रिपोर्ट के अनुसार प्रभावित क्षेत्र में आरजीजीवीवाई परियोजना के लिए परियोजना विकासकर्ताओं के 10% योगदान की लागत।
- (iii) वार्षिक निर्धारित प्रभार कुल विक्रय योग्य डिजाइन ऊर्जा के संबंध में दीर्घावधि पीपीए के आधार पर टाई-अप की गई विक्रय योग्य डिजाइन ऊर्जा के लिए अनुपातिक रूप से ली जाएगी जिसे कुल विक्रय योग्य डिजाइन ऊर्जा से निम्नलिखित को घटाकर प्राप्त किया जाएगा-
- (क) 13% निःशुल्क विद्युत (सिजबान सरकार के लिए 12% तथा राज्य सरकार द्वारा गठित स्थानीय क्षेत्र विकास निधि के योगदान के लिए 1 %)। इस 12% निःशुल्क विद्युत को राज्य सरकार के निर्णय के अनुसार पृथक-पृथक समय के लिए रखा जाए।
- (ख) आरंभन की तारीख से 10 वर्ष की अवधि के लिए नामोद्दिष्ट पुनर्स्थापन क्षेत्र/परियोजना क्षेत्रों में संबंधित वितरण लाइसेंसों के माध्यम से राज्य सरकार द्वारा अधिसूचित प्रत्येक परियोजना प्रभावित परिवार को प्रत्येक माह 100 यूनिट बिजली के बराबर ऊर्जा निःशुल्क प्रदान की जाएगी।”

Annexure 5 contd.

**MINISTRY OF POWER
RESOLUTION**

New Delhi, the 31st March, 2008.

F.No. 23/2/2005-R&R (Vol. IV).- In this Ministry's Resolution F.No. 23/2/2005-R&R(Vol.III) dated 6th January, 2006 published in the Gazette of India (Extraordinary), Part I, Section 1, notifying the Tariff Policy under the provisions of Section 3 of the Electricity Act 2003, the following amendment is hereby made:

The following proviso is added at the end of Para 5.1 of the Tariff Policy:

“Provided that a developer, of a hydroelectric project, not being a State controlled/owned company, would have the option of getting the tariff determined by the appropriate Commission on the basis of performance based cost of service regulations if the following conditions are fulfilled:

- a) The appropriate Commission is satisfied that the project site has been allotted to the developer by the concerned State Government after following a transparent two stage process. The first stage should be for prequalification on the basis of criteria such as financial strength as measured by networth, past experience of developing infrastructure projects of similar size, past track record of developing projects on time and within estimated costs, turnover and ability to meet performance guarantee etc. In the second stage, bids are to be called on the basis of only one single quantifiable parameter, such as, free power in excess of 13%, equity participation offered to the State Government, or upfront payment etc.
- b) Projects of more than 100 MW design capacity for which sites have been awarded earlier by following a transparent process and on the basis of predetermined set of criteria would also be covered in this dispensation.
- c) Concurrence of CEA (if required under section 8 of the Act), financial closure, award of work and long term PPA (of more than 35 years) of the capacity specified in (d) below with distribution licensees are completed by 31.12.2010.

Annexure 5 contd.

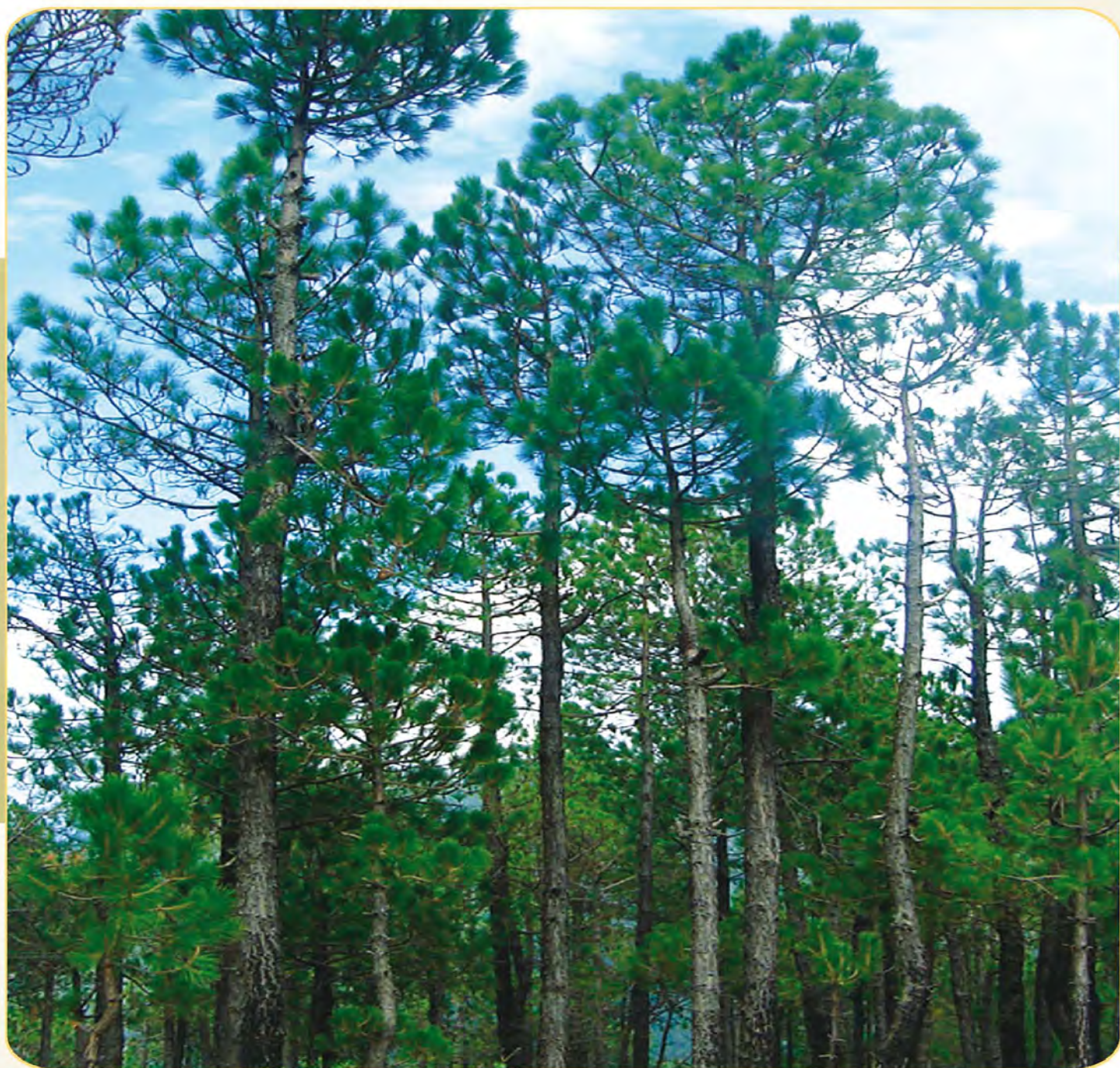
- d) Long term PPA would be at least for 60% of the total saleable design energy. However, this figure of 60% would get enhanced by 5% for delay of every six months in commissioning of the last unit of the project against the scheduled date approved by the Appropriate Commission before commencement of the construction. The time period for commissioning of all the units of the project shall be four years from the date of approval of the commissioning schedule by the Appropriate Commission. However, the Appropriate Commission may, after recording reasons in writing, fix longer time period for large storage projects and run-of-the river projects of more than 500 MW capacity. Adherence to the agreed timelines to achieve the fixed commissioning schedule shall be verified through independent third party verification.
- e) Award of contracts for supply of equipment and construction of the project, either through a turnkey or through well defined packages, are done on the basis of international competitive bidding.

In cases, where the conditions mentioned above at (a) to (e) are fulfilled, the Appropriate Commission shall determine tariff ensuring the following :

- (i) Any expenditure incurred or committed to be incurred by the project developer for getting project site allotted (except free power upto 13%) would neither be included in the project cost, nor any such expenditure shall be passed through tariff.
- (ii) The project cost shall include the
 - cost of the approved R&R plan of the Project which shall be in conformity with the following :
 - (a) the National Rehabilitation & Resettlement Policy currently in force;
 - (b) the R&R package as enclosed at appendix;and
 - the cost of project developers' 10% contribution towards RGGVY project in the affected area as per the project report sanctioned by the Ministry of Power.
- (iii) Annual fixed charges shall be taken pro-rata to the saleable design energy tied up on the basis of long term PPAs with respect to total saleable design energy. The total saleable design energy shall be arrived at by deducting the following from the design energy at the bus bar:

Annexure 5 contd.

- a) 13% of free power (12% for the host Government and 1% for contribution towards Local Area Development Fund as constituted by the State Government). This 12% free power may be suitably staggered as decided by the State Government
- b) Energy corresponding to 100 units of electricity to be provided free of cost every month to every Project Affected Family notified by the State Government to be offered through the concerned distribution licensee in the designated resettlement area/projects area for a period of ten years from the date of commissioning."





MINISTRY OF POWER
Government of India

Shram Shakti Bhawan,
Rafi Marg,
New Delhi -110 001
www.powermin.gov.in

For further details please contact:

Shri Jayant Kawale, Joint Secretary (Hydro)
Phone : 011-23714842 (Office)
E-mail : kawlejs@nic.in

Shri Sanjay Chadha, Director (Hydro)
Phone : 011-23715327 (Office)
E-mail : schadha@nic.in