INTERNATIONAL CONCLAVE ON KEY INPUTS FOR ACCELERATED DEVELOPMENT OF THE POWER SECTOR

12TH FIVE YEAR PLAN AND BEYOND

RECOMMENDATIONS

NEW DELHI
OCTOBER 2009

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CONTENTS

PREFACE

An International Conclave was organized by MoP/CEA in the beginning of the 11th Five Year Plan in July 2007 with a view to sensitize the industry and other stakeholders about the requirements of the Power Sector for 11th Plan & beyond. A base paper indicating the capacity addition programme for 11th Plan and various inputs and issues relating to implementation of the Plan were circulated in advance to all concerned. Following the recommendations of the conclave, a number of initiatives were taken by CEA and MoP conducive for realization of targets and promoting competition, capacity building and inculcating confidence in the industry, developers and financial institutions. The conclave was a great success and it worked as a catalyst towards realization of huge capacity addition target of about 78,000 MW for the 11th Plan.

Long-term planning is required for Power Sector in view of large gestation period of the projects. Therefore, CEA and MoP decided to take advance action for the 12th Five Year Plan. In this regard, CEA has already issued Plan for Development of Hydro Power Projects for 12th Plan in September, 2008 indicating shelf of hydro projects with the status and action points for each project.

Studies carried out in Central Electricity Authority indicate requirement of about 100,000 MW generation capacity in the 12th Plan Period and similar capacity addition would also require during 13th Plan. It was considered essential

to have interaction with all the stakeholders to enable them to gear up and take advance action commensurate with the magnitude of the expansion proposed.

With above objectives, an International Conclave was organized by MoP & CEA on August 18- 19, 2009 in partnership with Industry Associations (CII and IEEMA) to sensitize the industry, utilities and State Governments about the requirement of 12th Five Year Plan, to review their preparedness and to identify constraints and road blocks experienced by the stakeholders for taking necessary remedial action. A Base Paper containing the details of the proposed Plan, issues involved and inputs required for implementation of the Plan and detailed requirements of equipments and materials was also furnished in advance to all the participants. The conclave was welcomed by the industry and was a great success.

The inputs received during the conclave will be utilized by CEA to finalize the National Electricity Plan covering the 12th and 13th Five Year Plans. The major action points identified and the recommendations made in the Conclave are enclosed which may be used as guidelines to take appropriate action to achieve accelerated capacity addition in the country.

New Delhi
Dated: 08th October, 2009

RAKESH NATH
Chairperson, CEA

MAJOR ACTION POINTS IDENTIFIED AND RECOMMENDATIONS MADE IN THE INTERNATIONAL CONCLAVE ON KEY INPUTS FOR ACCELERATED DEVELOPMENT OF POWER SECTOR FOR 12TH PLAN AND BEYOND ORGANIZED BY MoP & CEA ON 18TH, 19TH AUGUST 2009

1. INTRODUCTION

1.1 An International Conclave was organized by CEA and MoP in the beginning of the 11th Five Year Plan in July 2007 with a view to sensitize the industry and other stakeholders about the requirements of the Power Sector for 11th Plan & beyond. A base paper indicating the programme for the 11th Plan and various inputs and issues relating to implementation of the Plan were circulated in advance to the industries and utilities. Following the recommendations of the conclave, a number of initiatives were taken by CEA and MoP conducive for realization of targets and promoting competition, capacity building and inculcating confidence in the industry developers and the Financial Institutions **(Annex-I).**

1.2 Long-term planning is required for Power Sector in view of large gestation period of the projects. Therefore, CEA and MoP decided to take advance action for the 12th Five Year Plan. In this regard, CEA has already issued Plan for Development of Hydro Power Projects for 12th Plan in September, 2008 indicating shelf of hydro projects with the status and action points for each project.

1.3 Studies carried out in Central Electricity Authority indicate requirement of about 100,000 MW generation capacity in the 12th

Plan Period. Out of this, a capacity of about 32,000 MW is presently under construction (details at **Annex II**). It was considered expedient to have interaction with all the stakeholders to enable them to gear up and take advance action commensurate with the magnitude of the proposed expansion.

2. INTERNATIONAL CONCLAVE ON KEY INPUTS FOR ACCELERATED DEVELOPMENT OF POWER SECTOR FOR 12th PLAN & BEYOND

2.1 The Conclave was organized by CEA and MoP on August 18- 19, 2009 in partnership with Industry Associations (CII and IEEMA) to sensitize the industry, utilities, State Governments and Regulatory Commissions about the requirement of the 12th Five Year Plan, to review their preparedness and to identify constraints and road blocks experienced by the stakeholders for taking necessary remedial action. A Base Paper containing the likely requirements of the proposed 12th Five Year Plan, issues involved and inputs required for implementation of the Plan was prepared and furnished to stake holders. Detailed requirements of equipments and materials was also furnished to the stake holders well in advance. The conclave was attended by about 600 participants from Central Government Ministries and Departments, State Governments, Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, PSUs, IPPs, Equipment manufacturers, Contractors, Training Institutions and Consultants. The conclave was welcomed by the industry and was a great success. The inputs received during the

conclave will be utilized by CEA to finalize the National Electricity Plan covering the 12th and 13th Five Year Plans.

2.2 The Conclave was inaugurated by Hon'ble Union Minister of Power Shri Sushil Kumar Shinde. Hon'ble Deputy Chairman, Planning Commission Shri Montek Singh Ahluwalia, Hon'ble Union Minister of State for Power Shri Bharatsinh Solanki, Shri H.S. Brahma, Secretary(P), GOI and Shri Rakesh Nath, Chairperson, CEA addressed the conference during the inaugural session.

An interactive session with the Industry representatives under the Chairmanship of Hon'ble Minister of state for Power was also held on 18th August evening.

2.3 The following sessions were held after the inaugural session

Session	Topic
1	Financing of Power Sector
2A	Manufacturing capabilities for main Plant equipment for Thermal Power Plants.
2B	Manufacturing capabilities for Plant &Equipment for Hydro Power Plants.
3A	Manufacturing capabilities for Balance of Plant equipment for Thermal Plants.

3B	Capacity Building for Transmission System including supply of equipment and execution.
4A	Capacity building for Distribution System including supply of equipment and execution.
4B	Fuel Supply.
5A	Executing agencies for construction of civil works, erection and commissioning of Mechanical and Electrical works of Thermal Power Plants.
5B	Executing agencies for construction of civil works, erection and commissioning of Mechanical and Electrical works of Hydro-mechanical and Electro-mechanical works of Hydro Power Plants and arrangement of construction machinery.
6A	Opportunities for employment generation and training requirement for skilled manpower.
6B	Renewable & distributed generation.
7	Panel discussion & Valedictory

At the beginning of each session, CEA representative gave a brief presentation indicating the requirement of the power sector, issues and possible solutions to generate discussion.

2.4 CEA presented the status of implementation of power projects to the tune of 80,000 MW under execution during the 11th plan and projected a requirement of 100,000 MW each during the 12th and 13th plans. A Shelf of Power Projects for 12th Plan was also circulated.

3 RECOMMENDATIONS OF CONCLAVE

The major issues raised in the conclave which need immediate attention are as under:

3.1 Timely Placement of Order:

The Conclave strongly recommended placement of orders for 12th Plan Projects during the 11th Plan itself so as to ensure commissioning of the projects during the 12th Plan.

3.2 FUEL

3.2.1 A thermal generation capacity of about 74,000 MW is required to be implemented during the 12th Plan, majority of which will be coal based. It is estimated that about 50,000 MW capacity could be implemented at projects which have been allocated captive coal blocks or are based on imported coal. However there are impediments in the development of coal blocks due to delay in granting clearances and problems in acquisition of land. Forest clearance is a major problem as coal blocks are in forest area. Captive coal blocks are generally unexplored and are expected to take more time in development.

3.2.2 According to present status of commissioning of power projects during 11th plan and production plan of CIL, the gap between demand and availability of domestic coal in the terminal year of the 11th plan is expected to be about 74 MT necessitating import of about 50 MT of coal. The shortfall is expected to increase to about 120 MT when all the 11th plan projects are commissioned and stabilize at the beginning of the 12th Plan. CIL has indicated additional coal production of only 100 MT during the 12th Plan @ 20 MT per year. This will not even be adequate for meeting the full requirement of the 11th Plan projects. Blending of imported coal may be technically feasible to the tune of 10% only. Therefore shortage of coal may result in stranded coal based capacity.

No coal seems to be available for linkage to new power projects of 12th plan. Application of projects totaling to more than 1 lakh MW are pending besides captive plants for coal linkage. MoC has granted coal linkage to additional projects totaling to about 28,000 MW in Nov. 2008 for which also CIL will have to take up action for augmentation of the production capacity beyond their present projected production plan.

3.2.3 Priority in allocation of gas from future gas availability from indigenous sources and imports for new generation capacity of about 20,000-25,000 MW is required to meet the situation of deficit in domestic coal production and to reduce CO_2 emissions of Power Sector. These gas based projects could be located at brown field and green field sites where land and water are already available. This capacity could come up fast and make up for shortfall caused

by slippages in ongoing thermal and hydro projects of 11th Plan and could also boost up the power availability at the beginning of the 12th Plan. Part of the gas based capacity (about 2000 MW) could be in combined cooling heating and power (CCHP) plants in view of high efficiency of 65 to 85% achievable in comparison to 55% in conventional combined cycle GT plants. Part of the capacity (about 2000 MW) could be in peaking GT plants which could also be pressed in service during emergencies.

3.2.4 In order to minimize the time required for development of coal blocks to enhance production of indigenous coal production and for setting up of gas based generation capacity, the following recommendations have been made in the conclave:

3.2.4.1 To expedite development of the captive blocks ;

a) 15 bore holes per sq. km may be permitted for exploration without insisting on forest clearance provided the developer gives an undertaking that no tree will be cut. This will avert time taken in forest clearance for exploration. However, forest clearance would be obtained for the mining project before obtaining approval for mining from Ministry of Coal.

b) In-principle approval for prospecting bidder may be given by MoC along with allocation of mine to avoid time taken in obtaining the same after allocation of mine.

c) Integrated development of rail network by Railways for both CIL and Captive coal blocks.

3.2.4.2 Review of progress of development of captive coal blocks and cancellation of allocation of blocks where no progress has been made.

3.2.4.3 Development of coal block in PPP mode by CIL on price based bidding on the Ultra Mega Power Project Model to meet the coal linkage commitment of CIL. A detailed proposal in this regard has already been furnished by CEA/MoP to MoC.

3.2.4.4 There is need to develop strategic equity participation in coal mining abroad with a view to ensure availability of coal and energy security of the country.

3.2.4.5 Setting up of coal washeries by CIL on priority to ensure supply of washed coal to power plants located away from mines to meet MOEF stipulations of ash content of coal.

3.2.4.6 Development of port facilities along with rail network to handle projected import of coal by the Thermal Power Stations.

3.2.4.7 Priority gas allocation may be given to power sector for development of about 25,000 MW gas based capacity to reduce CO_2 emissions of Power Sector and in view of anticipated domestic coal shortages. Part of gas allocation could be made to CCHP Plants (2000MW) which have high thermal efficiency and in peaking plants (2000MW). Balance capacity (about 21,000 - 22,000 MW) could be developed at brown field/green field sites where land and water are already available.

3.3 ENVIRONMENT AND FOREST CLEARANCE

Environment and Forest clearance for the identified power generation, transmission and mining projects planned for commissioning during the 12th plan may be expedited. MoE&F may be advised to accord priority to 12th Plan projects projected by MoP. MoE&F may also be requested to monitor and facilitate the environment and forest clearances required from state agencies as most of the delays take place at the state level.

3.4 CRITICAL MATERIALS

The country needs to develop indigenous manufacturing capacity for the following long lead critical materials for which we are dependent on a few international suppliers

- Castings and forgings for reactors, turbines and generators.
- CRGO steel for transformers. Ministry of Steel may be advised to take necessary action.
- Boiler quality plates and P-91 piping
- GIS and XLPE cables (220 kV & 400 kV rating)

3.5 INDIGENOUS CAPACITY BUILDING FOR HIGH EFFICIENCY SUPER CRITICAL UNITS AND BOPS

The following recommendations have been made:

- There is a need to expedite bulk tendering of 11 units of 660 MW with the condition of mandatory phased indigenous manufacturing. This will help in expediting transfer of energy efficient technology and development of indigenous manufacturing capacity.

- Delay in execution of BOP's is a major cause for delay in commissioning of thermal power projects. Orders for BOPs should be placed within 6 months of placement of order for main plant. More vendors for BOPs are required to be developed.

3.6 SKILLED MAN POWER

Shortage of skilled manpower is a major constraint being experienced in execution of power projects. MOP has already taken an initiative for capacity building by adopting ITIs or opening new ITIs in the project area by CPSUs. About 50 ITIs have already been adopted by the project developers under the 'Adopt an ITI' programme. A technical training institute is already under execution by NTPC at Sholapur.

It has been proposed to permit cost incurred by project developer in cost of development of skilled manpower in and around the project area in the project cost as a specified percentage of estimated

project cost or actual cost incurred, whichever is less, for determining the tariff.

Industry should also take initiatives in **Mission Mode** to develop skills in the country. BHEL should also build up a pool of high pressure welders by arranging training and certification at their HP Welding Institute , Trichy.

These measures will not only help building up skilled manpower force in the country but also provide employment opportunity to youth in the project area benefiting the PAPs.

3.7 FINANCIAL ISSUES

The total requirement of funds as estimated by Working Group on power for 11th Plan was about Rs.10 lakh crores and an investment of similar order is expected during 12th Plan . Sectoral and group caps are restricting the flow of funds to power sector. The recommendations made during the conclave to address these issues are as under:

- There is a need for increasing the internal and external funding in the Power Sector. In case of bank credit, single and group borrower exposure norms imposed by RBI need to be increased. Similarly, the exposure limit applicable to Banks for lending to NBFCs engaged in Power Sector funding may be increased. Banks also need to enhance their own sectoral limits for credit to the Power Sector. Incentives need to be given for foreign funding.

- State sector utilities should be allowed to get return on equity as admissible under the relevant regulations of the appropriate regulatory commission.

- Banks need a special dispensation for increasing their exposure UMPP developers. Alternatively, a cap could be imposed on awarding the number of generation projects to a single bidder in UMPPs and case II bidding projects.

- Financial Institutions dealing exclusively with the Power Sector may be permitted to raise foreign currency funds (ECB) under the automatic route (i.e. without having to seek specific approval of the RBI) and chanelise these to the Power Sector.

- Securitization of future receivables by a company should be permitted as collateral for raising debt.

- Keep long term power sector lending institutions, namely, Power Finance Corporation and Rural Electrification Corporation outside the purview of Non-Banking Financing Companies (NBFC) guidelines of RBI. They may be allowed to have their own prudential lending norms.

- Since power projects require long-term financing, banks should be facilitated to undertake take-out financing (by rotating the loan from one bank/financial institution to another after a short term period of 5-7 years thereby making it possible for power sector to have loan for longer terms) by reducing transaction costs such as stamp duty.

- Long –term funds available with Provident Funds, Pensions and Insurance funds to be made available to the power sector through appropriate regulatory changes.

- To chanelise household small savings to the power sector NBFCs such as PFC and REC should be allowed to issue bonds which enjoy income tax and capital gain tax exemption.

- Proceeds from disinvestments in power sector PSUs should be made available for reinvestment in the sector.

- Resource rich states allow development of power project on the condition that a predefined percentage of power from the Project is supplied to the state at tariff/variable charges to be determined by the SERC. Accordingly the IPPs have been signing MoU with the host state for supply of power from the project. However, as per National Tariff Policy the distribution companies have to procure power through tariff based competitive bidding. FIs have raised question in validity of such MOUs/PPAs in contravention to the National Tariff Policy. This issue needs to be examined by the Ministry of power.

3.8 CONTRACTUAL ISSUES:

A model contract document for hydro projects has recently been developed by a committee under the chairmanship of Chairperson, CEA. The document includes Risk Register indicating the various risks and proper allocation of the risk, between the employer and contractor. The model contract document needs to be discussed with

all the stake holders and after taking their inputs into consideration, the same may be circulated to all concerned for adoptation.

3.9 CAPACITY BUILDING & PLANNING RELATED ISSUES

3.9.1 There is a need to establish a Central Hydro Power Institute with expertise in Planning design, engineering, project management and promotion of new technologies in the hydro power.

3.9.2 After unbundling of State Electricity Boards there is need for nominating a nodal agency responsible for integrated long term planning of the power sector in the State in coordination with the Generation, transmission and distribution companies and CEA. States may consider to nominate the Transco as the nodal agency.

3.9.3 There is a need for the State distribution companies to come out with bids for procurement of power (case I bidding) to enable IPPs enter into long term agreement and to facilitate financial closure of the projects. Many States particularly those not having energy resources are required to take expeditious action in the matter to meet the long term power requirements of the State.

3.9.4 There is need to strengthen the testing facilities in CPRI to minimize the waiting time. The short circuit testing facilities for transformers of higher rating is also required to be established in CPRI to save time in transportation and testing of larger capacity transformers to testing facilities abroad.

3.10 OTHER RECOMMENDATIONS

3.10.1 It was decided to form a Task Foece comprising MoP, CEA, CII and IEEMA to take follow up action on the recommendations of the conclave and to continue dialogue with the Industry on development of Power Sector.

3.10.2 Other recommendations of the conclave are summarised below:

- **Streamlining of clearance procedure:** Delays in land acquisition, environmental and forests clearances lead to substantial cost overruns. These delays also hurt the return on the capital investment. These clearance procedures need to be streamlined.

  At the time of giving the Letter of Assurance for fuel in case of coal based power plants, the specific linked mine may be indicated to avoid delays in Environment Clearance.

THERMAL POWER PLANT

BoP

- Orders for BoPs should be placed considering the manufacturing capability of respective vendors.
- Bonus/Penalty system should be adopted for early/late delivery of BoP equipments respectively.

- State Power Utilities may be advised to follow the guidelines for prequalification requirements of BoP vendors prepared by CEA. States are to be advised to follow these guidelines.

- Existing BoP vendors may be requested to diversity into other fields in BoP.

- Introduction of new technology system in BoP particularly coal and ash handling plant is needed. Digital distributed control and Management Information System (DDC and MIS) should be introduced.

- Water treatment plant specification should be standardized.

Executing Agencies

- Standard layouts and standardized number of packages should be adopted for various unit sizes subject to changes due to specific site conditions.

- Agencies should immediately mobilize at site after award contract.

- There is a need to enhance vendor base for erection agencies.

- Each contractor must employ qualified project management experts to oversee planning, execution and proper deployment of resources.

- Timely payment to subcontractor is essential.

- Non performing contractor should be strictly penalized.

- Contractor should choose only such sub-contractors who have the requisite qualification and have adequate resources with them.

- Project authorities should not compromise on quality control.

- Law and Order problem should be suitably addressed by the project developers.

HYDRO POWER PLANTS

Manufacturing Capabilities for Plant and Equipment

- No constraint for manufacturing capabilities for Plant & Equipment for Hydro power Plants for 12th Plan is expected.

- Advance action shall be taken by Project Authorities to Award Contracts for projects identified for benefits in the 12th Plan during the 11th Plan itself so that timely action can be taken by manufacturers/suppliers.

- Qualifying requirements may be modified/rationalized to enable financially sound new players to compete.

- Better quality control at manufacturers' works as this would reduce the erection and operational problems. Manufacturers need to review the quality assurance programme of the E&M and HM equipments.

Executing Agencies

- Third party inspection is essential to ensure quality and completeness of work.

- A Central warehouse of latest construction machinery needs to be created for fuse by various developers.

- There is a need to redesign Tunnel Boring Machines suitable for Himalayan geology.

- Seismic prediction methodology needs improvement for assessing geological conditions in underground works to minimize geological surprises.

- Qualifying Requirements need to be modified/rationalized to facilitate financially sound parties having experience in other civil infrastructure works to enter into Hydro Project Construction work.

- The developers face difficulties in obtaining data related to hydrology and topo sheets of the project are. The procedure for obtaining hydrological data and topo sheets needs to be streamlined and made available to project developers.

TRANSMISSION

- Transmission Plan needs to be made more flexible, modular & optimal while conserving Right of Way. This is essential to cater to uncertainties of projects their commissioning schedule and beneficiaries.

- Manufacturing capacity of transmission equipment in the country to be ramped up to meet requirements arising out of 100 GW of generation addition programme in 12th Plan period.

- There is a need to bring down cost of GIS equipments.
- Adopt standard designs in towers and use of GPS/GIS for survey.
- Need is felt for enhancement of indigenous manufacturing capacity of main equipments such as 765 Kv equipment including short circuit testing facilities, transformers, reactors, CB, CTs etc.
- Need for latest technology in design and implementation of transmission systems such as use of UHVAC/DC lines, HSIL, FACTS, GIS etc.

DISTRIBUTION

- State Govt. to take appropriate action for augmentation of required number of electrical inspectors in their states in view of huge investments envisaged in the Power Sector.
- Utilities to train their staff for enhancing their skill for improving the quality of work in the field of installation.
- Utilities to ensure timely completion of APDRP Schemes.
- Utilities to take following action in advance for ensuring that adequate distribution infrastructure is in place during the 12th Plan.
    - Utilities to adopt guidelines on energy efficient transformers circulated by CEA.

- Manufacturers to assess the requirement of CRGO steel for transformers and enter into long term agreement with suppliers of CRGO.

- Utilities also to take similar action for bulk procurement of distribution transformer so as to avoid delay.

- MoP may consider to take up with Ministry of Industries for creation of indigenous facility for production of CRGO steel.

- MoP may consider assistance to Private distribution Companies in R-APDRP.

MANPOWER DEVELOPMENT

- Need to enhance manpower, skilled and unskilled, commensurate with the growing requirements of the Power Sector particularly for remotely located hydro plants.

- Every power project developer and EPC contractor to adopt ITI s in the vicinity of their project sites for upgrading it to meet the requirement of quality manpower. Developer to carry out manpower planning year-wise for different categories of personnel depending on their projects under execution and in planning stage. Private sector to take bigger responsibility of training.

- Utilization of the existing training infrastructure to its full capacity.

- Capacity building of franchisees through National Franchisee Training Programme.

RENEWABLE AND DISTRIBUTED GENERATION

- Need to reduce the cost of renewable technologies through R&D, conducive Policies and Regulatory Framework.

- For developing Solar Power Plants, UMPP model of formation of SPV for each plant may be adopted.

- Emphasis to be given to “Distributed Flexible Generation” and “Flexibility in Grid Management”, by fixing targets for capacity addition from distributed generation as a percentage of total planned addition.

ANNEX I

ACHIEVEMENTS OF THE CONCLAVE ON KEY INPUTS FOR ACCLERATED DEVELOPMENT OF POWER SECTOR DURING 11th PLAN AND BEYOND HELD IN THE YEAR 2007

In July, 2007, the first International Conclave on Key Inputs for Accelerated Development of Power Sector during 11th Plan & beyond was organized by CEA and Ministry of Power on 4th – 5th July 2007 to sensitize the industry and utilities about the requirement of the power sector during 11th Plan & beyond and have interaction with stakeholders for implementation of the11th Plan. A number of recommendations were made which were followed up by MoP/CEA and a number of initiatives were taken to address the issues raised during the conclave. Some of the important achievements are described below:

- CEA reviewed the Pre-qualification (PQ) requirements for manufacturers of supercritical boilers and turbines and Balance of Plants to permit entry of new players to enhance manufacturing capacity and promote competition. Public Sector Generation Companies have adopted the PQ criteria as recommended by CEA and new players have been able to participate in the competitive bidding.

- Approval was obtained from GoI for bulk tendering of 11 units of 660 MW each with Super Critical technology with mandatory phased indigenous manufacturing with a view to promote indigenous manufacturing. It has been proposed to give some minimum orders to the lowest bidder and offer some units to L2/L3 bidders provided

they match the price of L1 bidder. The NIT is expected to be issued during October 2009.

- Follow up action was taken with all concerned to ensure timely placement of orders for power projects both for Main Plant and Balance of Plants. Orders for generation capacity to the tune of 51,000 MW were placed during first two years of the 11th Plan (as against 14,400 MW during the first two years of 10th Plan).

- Standard specifications for Boiler and Turbines for 500 MW and above size were prepared by CEA and circulated to all the developers to minimize time in design and engineering of the projects with a view to reduce the over all project execution time.

- Project developers advised not to enter into fixed price contracts for works of long gestation period and have an appropriate price variation clause. A model contract document with appropriate price escalation formula which gives due weight age to various inputs was circulated to all concerned by CEA.

- A Task Force on Model Contract Document for Hydro projects was formed with representation from CEA, MoP, Uitlities/IPPs, Consultants and Contractors. Risk register indicating all possible risks in hydro project has been prepared and clear responsibility and methodology for mitigating the risks has been formulated with proper risk sharing between the employer and the contractor. The Task Force has since finalized the Model Contract documents and a Conclave has been organized on 1st October, 2009 to discuss the same with all concerned to take their inputs.

- Matter was taken up with Ministry of Finance and Government approval was obtained to enable BHEL to take advance procurement action for critical materials (Forgings & Castings) for which there are only a few suppliers world over. BHEL has also placed advance orders for these critical items.

- Fuel linkages were obtained for the 11th Plan Projects.

- CEA reviewed and optimized the requirement of land for Thermal Power Projects.

- Regional meetings were held with the industry in coordination with CII at Chennai, Chandigarh & Mumbai to take follow up action.

ANNEX-II

LIST OF UNDER CONSTRUCTION PROJECTS FOR LIKELY BENEFITS DURING 12TH PLAN
(As on 04.08.2009)

Sl.No.	PLANT NAME	STATE	AGENCY	SECTOR	ULTIMATE CAPACITY (MW)	FUEL TYPE	BENEFITS 12TH PLAN (2012-17) (MW)	LIKELY YEAR OF BENEFITS
	HYDRO							
1	LOWER JURALA	AP	APGENCO	S	240	HYDRO	120	2012-13
2	TEESTA VI	SIKKIM	LANCO	P	500	HYDRO	500	2012-13
3	RANGIT IV	SIKKIM	JAL POWER	P	120	HYDRO	120	2012-13
4	KISHANGANGA	J&K	NHPC	C	330	HYDRO	330	
	TOTAL HYDRO						1070	
	THERMAL							
1	NABINAGAR JV	BIHAR	NTPC	C	1000	COAL	250	2012-13
2	BARH-I, U3	BIHAR	NTPC	C	1980	COAL	660	2012-13
3	BARH-II	BIHAR	NTPC	C	1320	COAL	1320	2012-13
4	MAUDA TPP	MAHARASHTRA	NTPC	C	1000	COAL	1000	2012-13
5	TUTICORIN TPS U-1,2	TN	NLC JV	C	1000	COAL	1000	2012-13
6	RIHAND-III U-5,6	UP	NTPC	C	1000	COAL	1000	2012-13
7	VINDHYACHAL ST-IV U-11,12	MP	NTPC	C	1000	COAL	1000	2012-13
8	KRISHNAPTNAM	AP	APGENCO	S	1600	COAL	1600	2012-14
9	KALISINDH TPS U1,2	RAJASTHAN	RRVUNL	S	1200	COAL	1200	2012-13
10	MARWAH TPP U2	CHATTISGARH	CSEB	S	1000	COAL	500	2012-13
11	CHANDRAPUR TPS	MAHARASHTRA	MAHA GEN	S	1000	COAL	1000	2012-13
12	MALWA TPP U-1,2	MP	MPPGCL	S	1200	COAL	1200	2012-13
13	PARLI TPS U-3	MAHARASHTRA	MSPGCL	S	250	COAL	250	2012-13
14	KAKATIYA EXT	AP	APGENCO	S	600	COAL	600	2012-13
15	ULTRA MEGA MUNDRA	GUJARAT	TATA POWER	P	4000	COAL	2400	2012-14
16	STERLITE TPP U 3,4	ORISSA	STERLITE	P	2400	COAL	1200	2012-13
17	UMPP SASAN	MP	RELIANCE	P	3960	COAL	2640	2012-14
18	RAIGARH STPP PH-III U 1-4	CHATTISGARH	JINDAL POWER	P	2400	COAL	2400	2012-14
19	JHAJJAR TPP	HARYANA	CLP POWER	P	1320	COAL	1320	2012-13
20	TIRODA TPP PH-I	MAHARASHTRA	ADANI	P	1320	COAL	1320	2012-13
21	TIRODA TPP PH-II	MAHARASHTRA	ADANI	P	660	COAL	660	2012-13
22	MUNDRA PH-III	GUJARAT	ADANI	P	1980	COAL	1980	2012-13
23	AVANTHA BHANDAR TPP	CHATTISGARH	AVANTHA POWER	P	600	COAL	600	
24	BELA TPP	MAHARASHTRA	IDEAL ENERGY	P	270	COAL	270	
25	ADHUNIK POWER TPP	JHARKHAND	ADHUNIK POWER	P	270	COAL	270	
26	MALIBRAHMANI TPP	ORISSA	MONET POWER	P	1050	COAL	1050	
27	DERANG TPP	ORISSA	JITPL	P	1200	COAL	1200	
28	KAMLANGA TPP	ORISSA	GMR ENERGY	P	1050	COAL	1050	
	TOTAL THERMAL						30940	
	TOTAL (UNDER CONSTRUCTION)						32010	

C: Central Sector; S: State Sector; P: Private Sector

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