



भारत सरकार

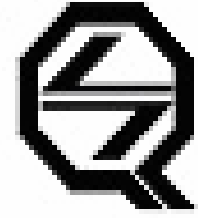
GOVERNMENT OF INDIA

केंद्रीय विद्युत प्राधिकरण

Central Electricity Authority

ताप विद्युत नवीनीकरण एवं आधुनिकीकरण

Thermal Renovation and Modernisation Division



Muzaffarpur TPS of KBUNL Unit-1 & 2 Under R&M



Quarterly Review Report

Renovation, Modernisation and Life Extension of
Thermal Power Stations

{1st Quarter of 2012-13, (April – June; 2012) during 12th Plan}

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Foreword

Electric energy is the driving wheel of modern Industries. Accordingly Govt. of India have taken a number of initiatives which, inter-alia, include new multi modal electricity generation capacity addition. To further supplement the above efforts in the area of efficient power generation, Renovation & Modernization (R&M) and Life Extension (LE) of the existing old power stations have been recognized as one of most cost-effective options due to its short gestation period and low cost.

The Thermal Renovation & Modernization (TRM) Division is entrusted with the responsibility of monitoring the progress of R&M/LE activities costing more than ₹ 100 Crore in thermal power generating units in the country till the units are re-commissioned. Based on the information received from various utilities undertaking the R&M/LE works, the Quarterly Review Report (QRR) is prepared regularly by TRM Division and circulated to senior officers in MOP and CEA to keep them abreast with the latest status of the physical and financial progress of R&M/LE works at various thermal units. The QRR is also available on CEA website <http://cea.nic.in>

In order to carry out R&M/LE works, Bathinda TPS Unit – 3&4 (2x110 MW), Barauni TPS Unit – 6&7 (2x110 MW), Muzaffarpur TPS Unit – 1&2 (2x110 MW), Harduaganj TPS Unit -7 (110MW), Obra TPS Unit 7,10 & 11 (1x100+2x200 MW), Patratu TPS Unit 9 (110 MW) and Tanda TPS Unit 2 (110 MW) were already under shut down and supply of materials/equipments and erection -commissioning activities continued for above mentioned thermal units. The LE works at DPL TPS unit-6 (110 MW) and Patratu TPS unit –10 (110 MW) has been completed during May, 2012. Synchronization of Bhatinda TPS unit -3 (110 MW), Muzaffarpur TPS unit-1 (110 MW) and Tanda unit-2 (110 MW) are expected during the next quarter i.e. July – Sept., 2012.

Under Energy Efficiency Programme funded by KfW Bank/Germany, the DPRs for R&M/LE works for Unit-3 (210 MW) Nasik TPS of Mahagenco, Unit – 1, 2 & 3 (3x210 MW) Kolaghat TPS of WBPCL and Unit – 1, 2 & 3 (3x210MW) Bokaro ‘B’ TPS of DVC have been prepared. The DPRs in respect of U-3, Nasik TPS and U-1,2&3 Kolaghat TPS have been accepted by the respective utilities.

Under Indo-German Energy Forum (IGEF), Phase-II activity, a consultant-M/s Lahmeyer International (India) Ltd. has been appointed and contract has been signed on 16.03.2012 by CEA to provide the consultancy services for ‘Development of Tendering Procedures and Model Contract document for R&M of Fossil Fuel Based Power Plants in India’. The revised inception report was submitted on 12.07.2012 and same is under examination. The project is funded by KfW Bank/Germany.

The World Bank is providing Technical Assistance to CEA of US \$ 1.1 million as a part of GEF grant under “Coal Fired Generation Rehabilitation Project –India” for addressing the barriers to Energy Efficiency R&M in India. M/s. ABPS Infrastructure Advisory Services Ltd., is working as ISC (Implementation Support Consultant) to assist CEA for implementing the project under title “Technical Assistance to CEA”. M/s Mercados Energy Market India has been appointed as a Consultant for Study on Reduction of Barriers and Study on Developing Markets for implementation of R&M in thermal power stations in India w.e.f. 24.04.2012 & 14.05.2012 respectively. M/s KPMG has been selected as a Consultant w.e.f. 16.07.2012 for Review of Institutional Capacity and capacity strengthening interventions in CEA. M/s WAPCOS Ltd. has been selected as a Consultant for Review of Experience from Pilot R&M projects. Draft contract was signed on 18.05.2012.

The MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out further detailed study for R&M in respect of Vijaywada TPS Unit-1 (210 MW) of APGENCO, Wanakbori TPS Unit-1 (200 MW) of GSECL and Kahelgaon STPS Unit – 2 (210 MW) of NTPC based on the findings of the Pre-Primary study report

We heartedly acknowledge and appreciate the co-operation of the Utilities/Organizations for providing the necessary and relevant information regarding the physical and financial progress of their R&M projects. We would be highly grateful for the suggestions/feedback for further improvement in the Quarterly Review Report.

नई दिल्ली
दिनांक : 19.7.2012

(तेजिंद्र पाल सिंह)
मुख्य अभियन्ता

Highlights

1. LE/ R&M Achievements during 11th Plan (2007 – 2012)

Sl. No.	Particulars	State sector		Central sector		Total (State + Central)	
		No. of units	Capacity (MW)	No. of units	Capacity (MW)	No. of units	Capacity (MW)
A)	LE works						
1.	Completed during 11 th Plan	10	1024	3	267	13	1291
B)	R&M works						
2.	Completed during 11 th Plan	20	4485	39	10370	59	14855
	TOTAL	30	5509	42	10637	72	16146

2. LE / R&M Programme during 12th Plan (2012 - 2017)

S.No.	Particulars	Revised Tentative LE/R&M works during 12 th Plan on account of slippage from 11 th Plan		Total (State Sector + Central Sector)
		State Sector	Central Sector	
		No. of units & capacity (MW)	No. of units & capacity (MW)	
1	2	3	4	5
1.	LE	38 (6820)	32 (5246)	70 (12066)
2.	R&M	20(4150)	45 (13151)	65 (17301)
	Total	58 (10970)	77 (18397)	135 (29367)

(Details are furnished at Appendix I)

3. Important Achievements of R&M Projects during 2012-13 (upto 30.06.2012)

- i) DPL TPS Unit – 6 (110 MW) - Synchronised on 07.05.2012.
- ii) Patratu TPS Unit – 10 (110 MW) - Test synchronized on 24.05.2012, operating at 75-80 MW load. COD is yet to be achieved.

4. External Co-operation for R&M/LE of TPS

The status of activities under external cooperation for R&M/LE of TPS is furnished below (as on 30.06.2012) :-

(A) KfW funded Programme

(i) Preparation of DPRs for EE R&M by the consultant M/s Evonik Energy Services Pvt. Ltd., Germany.

a) Unit-3(210 MW) of Nasik TPS

The DPR was prepared by M/s. Evonik and the same has been accepted by Mahagenco/ MERC. As per DPR the estimated cost of R&M project is as Rs.481 Crs.

b) Unit 1,2 & 3 (3x210 MW) of Kolaghat TPS

The DPRs were prepared by M/s. Evonik and the same have been accepted by WBPDC.

c) Unit 1, 2 & 3(3x210 MW) of Bokaro 'B' TPS

The final DPRs have been prepared and sent to DVC in March 2012. The acceptance of DPRs by DVC is awaited.

(ii) Phase-II activity: Development of Tender Procedure and Model Contracts for R&M of Fossil Fuel Based Power Plants in India.

M/s Lahmeyer International (India) Ltd. has been appointed as a Consultant to provide the consultancy services for 'Development of Tendering Procedures and Model Contract document for R&M of Fossil Fuel Based Power Plants in India'. The contract was signed between CEA and M/s Lahmeyer International (India) Ltd. on 16.03.2012. The revised inception report was submitted on 12.07.2012 and same is under examination.

(B) 'Technical Assistance to CEA' funded by World Bank under the umbrella project "Coal Fired Generation Rehabilitation Project-India"

The World Bank is providing technical assistance of US \$ 1.1 million as a part of GEF grant to CEA under "Coal Fired Generation Rehabilitation Project-India" for addressing the barriers to Energy Efficient R&M of coal fired generating units in India. The Technical Assistance to CEA project is being implemented by CEA through appointment of consultants for carrying out the studies in the field related to R&M of thermal power stations..

The appointment of various consultants for carrying out the studies is under progress and the present status is as under:

Sl. No.	Consultancy services	Status as on (31.06.2012)
1.	Implementation Support Consultancy (ISC)	M/s ABPS Infrastructure was appointed as ISC on 28.10.2010 for assisting CEA in implementing the project.
2.	Study on Reduction of Barriers to R&M intervention in thermal power station in India.	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 24.04.2012. The Inception report has been submitted by M/s Mercados in June, 2012.
3.	Study on Developing Markets for implementation of R&M in thermal power stations in India	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 14.05.2012. The Inception report has been submitted by M/s Mercados in June, 2012.
4.	Review of Experience from Pilot R&M projects	M/s WAPCOS Ltd. has been selected as a Consultant. Draft contract was signed on 18.05.2012.
5.	Review of Institutional Capacity and capacity strengthening interventions in CEA	M/s KPMG has been appointed as a Consultant on 16.07.2012. The kick-off meeting has been held on 16.07.2012.

(C) Japan-India co-operation for Pre- Primary study of Efficiency and Environmental improvement of Coal fired stations.

The 2nd Phase MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out detail diagnostic study for energy efficiency oriented R&M activities in three nos. of units.

(D) JICA Study on Renovation & Modernization / Complete Replacement of State Sector old inefficient coal based thermal power station in India.

A study on renovation & modernization / complete replacement of State sector old inefficient coal based thermal power station in India was undertaken by JICA under directives of Government of India covering the State sector power station viz. Obra A TPS Unit No. 1 to 8 (U.P), Satpura TPS Unit No. 1 to 5 (M.P), Bhusawal TPS Unit No. 2 & 3 (Maharashtra) and Parli TPS Unit No. 3 to 5 (Maharashtra). Final Report of their observation has been submitted on 21.06.2012

Quarterly Review Report on Renovation, Modernisation and Life Extension of Thermal Power Plants

1.0 Introduction

At the time of independence, the total installed capacity in the power sector was 1362 MW of which steam power plants contributed 756 MW. The installed generation capacity has since grown manifold. The total installed capacity as on 31.03.2011 was 199877 MW of which Thermal power plants contributed 131603 MW (65.8%). The break up of 65.8% thermal power plants is 56% (Coal based), 9.2% (Gas based) and 0.6% (Diesel based).

Renovation & Modernization (R&M) is seen as a cost-effective option for additional generation from the existing thermal power stations and better asset management due to its low cost and short gestation period. Besides generation improvement and life extension, other benefits achieved from R&M / LE include improvement in availability, safety, reliability and environmental emissions.

Many of the thermal power plants are not operating to their full potential and large numbers of thermal units are old and outlived their normal life. Presently, a large number of 200/210 MW units have completed or are near completion of their normal design life. The perspective R&M programme aims at extending their operating life further and also up grade their performance through Energy Efficient R&M (EE R&M).

2.0 Objective of R&M Programme

The main objective of Renovation & Modernisation (R&M) of thermal generating units is to make the operating units well equipped with modified / augmented latest technology equipment and systems with a view to improving their performance in terms of output, reliability and availability, reduction in maintenance requirements, ease of maintenance and minimizing inefficiencies.

3.0 Objective of Life Extension Programme

The R&M programme is primarily aimed at generation sustenance and overcoming problems. The life extension (LE) programme on the other hand focuses on plant operation beyond their original design life after carrying out specific life assessment studies of critical components.

4.0 Renovation and Modernisation (R&M) and Life Extension Programme (LEP) from 7th Plan onwards till 11th Plan

R&M Programme in a structured manner was initiated in 1984 as a centrally sponsored programme during 7th Plan and the programme continued during the two Annual plans 1990-91 & 1991-92. The momentum for undertaking R&M works continued during the 8th & 9th Plan. But the same could, however not be sustained during 10th Plan. The plan wise details are given below :-

The momentum for undertaking R&M works continued during the 8th & 9th Plan but the same could however, not be sustained during 10th Plan. There is an improvement in 11th Plan as per the details given below:-

S. No	5-Year Plan	Year	No. of TPS / No. of Units	Capacity (MW)	Additional Generation Achieved MU/ Annum*	Equivalent MW**
1	7 th Plan & 2 Annual Plans	85-86 to 89-90 & 90-91, 91-92	34 / 163	13570	10000	2000
2	8 th Plan (R&M) (LEP)	92-93 to 96-97	44 / 198 43/(194) 1 (4)	20869 (20569) (300)	5085	763
3	9 th Plan (R&M) (LEP)	97-98 to 2001-02	37 / 152 29/ (127) 8/ (25)	18991 (17306) (1685)	14500	2200
4	10 th Plan (R&M) (LEP)	2002-03 to 2006-07	9/25 (14) (11)	3445 (2460) (985)	2000	300
5	11 th Plan (R&M) (LEP)	2007-08 to 2011-12	21/72 (15/59) (6/13)	16146 (14855) (1291)	5400	820

*Tentative figure.

** Equivalent MW has been worked out assuming PLF prevailing during that period.

5.0 National Perspective Plan

Based on the discussions held with Ministry of Power, various utilities, PFC and BHEL, CEA have prepared a “National Perspective Plan for Renovation & Modernisation and Life Extension and uprating (LE&U) of thermal power stations upto the year 2016-17”. This document was released by Honorable Minister of Power on 14.12.2009 on the occasion of Energy Conservation day.

6.0 LE / R&M Programme during 12th Plan (2012 - 2017)

Break-up of revised tentative LE and R&M works of 29367 MW, on account of slippage from 11th Plan, to be taken up during 12th Plan in terms of Central/State sector-wise is furnished below (details are furnished at Appendix I):

S.No.	Particulars	Revised Tentative LE/R&M works during 12 th Plan on account of slippage from 11 th Plan		Total (State Sector + Central Sector)
		State Sector	Central Sector	
		No. of units & capacity (MW)	No. of units & capacity (MW)	
1	2	3	4	5
1.	LE	38 (6820)	32 (5246)	70 (12066)
2.	R&M	20(4150)	45 (13151)	65 (17301)
Total		58 (10970)	77 (18397)	135 (29367)

6.1 Details of LE and R&M works to be taken up during the first years of 12th Plan:

During the first year of 12th Plan period LE works on 4 nos. units (440 MW) and R&M in 6 nos. units (646 MW) have been identified, details are furnished in Appendix – II A & B.

Sl. No	Particulars	State sector		Central sector		Total (State + Central)	
		No. of units	Capacity (MW)	No. of units	Capacity (MW)	No. of units	Capacity (MW)
1	LE works	4	440	-	-	4	440
2	R&M works	4	430	2	216	6	646
	TOTAL	8	870	2	216	10	1086

6.2 Achievement of LE/R&M Programme during the 12th Plan up 30th June 2012:

6.2.1. Achievement of R&M Programme during the 12th Plan up 30th June 2012:

During 12th Plan, R&M works have been completed in 2 units in the state sector as details furnished below:-

State Sector (2 Nos. of units)

1. DPL TPS Unit – 6 (110 MW) - Synchronised on 07.05.2012.
2. Patratu TPS Unit – 10 (110 MW) - Test synchronized on 24.05.2012, operating at 75-80 MW load. COD is yet to be achieved.

Sub total (R&M) - 2 Units (220 MW)

6.2.2. Achievement of LE Programme during the 12th Plan up 30th June 2012: - Nil -

Total (LE and R&M) - 2 Units (220 MW)

7.0 Future vision for Life Extension / R&M Programme

The coal based thermal plants are the backbone of Indian power sector. Presently, 200/210/250/500 MW thermal units contribute about 60% of total generation in the country. They are performing better in terms of their plant load factor and availability. However, a large number of such 200/210 MW units have or are near completing their normal operating life and need modernization and life extension. There exists a potential for enhancing their rated capacity by 4-8% and efficiency by 8 to 10% in various 200/210 MW LMZ machines. Few such units have been taken up as pilot projects under Energy Efficient R&M (EE R&M) programme through funding support from World Bank and KfW, Germany. **The approach to R&M and Life Extension & Uprating (LE&U) has shifted primarily from “generation maximization” to “performance enhancement” with efficiency improvement and plant uprating as an integral part.**

So far, R&M activities were confined to old, small size units to sustain their operation, improve plant availability and extend their operating life. However, such units are highly inefficient and beset with various operational problems. It is aimed at to gradually decommission such units.

8.0 External Co-operation for R&M of TPS

To demonstrate the Energy Efficiency R&M programme in thermal power stations in India, a few pilot R&M projects have been financed by some external funding agencies such as KfW Development Bank-Germany, World Bank, European Union (EU) etc. The soft loans are provided by these external agencies for energy efficiency R&M programmes. Also, KfW & World Bank have provided some grant for technical assistance for preparation of Feasibility Reports/DPRs at selected thermal units and carrying out some R&M related studies. METI (Ministry of Economy, Trade and Industry), Japan and MOP, Govt. of India have agreed to extend their cooperation in sharing of technical expertise as well as in actual implementation of mutually agreed techno-economical R&M solutions. In addition to this, KfW has also financed the project “Development of Tender Procedure and Model Contract for the R&M of Fossil Fuel Based Thermal Power Plants in India”. The details of the above programme are as follows:-

8.1 Energy Efficiency R&M Programme funded by KfW Bank-Germany

Under Energy Efficiency R&M Programme, KfW Development Bank–Germany has provided a soft loan of Euro 90 million for implementation of Energy Efficiency R&M of two units of 210MW viz Nasik Unit 3 of MAHAGENCO and one Unit of Kolaghat TPS of WBPDC. In addition to the above, KfW Bank has also provided a grant of Euro 1.3 million for preparation of feasibility reports/DPR to identify & finalize the scope of works for R&M/LE for the following seven units at three thermal power stations through a consultant:-

- i) Nasik TPS, U-3 (210MW) of Mahagenco
- ii) Kolaghat TPS, U-1, 2 & 3 (3x210MW) of WBPDC.
- iii) Bokaro ‘B’ TPS, U-1, 2 & 3 (3x210MW) of DVC.

M/s Evonik Energy Services GmbH, Germany was selected as Consultant through ICB route to prepare feasibility study / DPRs for the above seven(07) units. The implementation of R&M/LE works based on the Detailed Project Report (DPRs) would be taken up by the concerned utilities. The present status of the programme is as under:-

i) Nasik TPS

The final DPR for Unit-3 (210 MW) was prepared by the consultant, and same has been accepted by MAHAGENCO and MERC.

ii) Kolaghat TPS

The DPRs for Unit-1,2& 3 (3x210 MW) of Kolaghat TPS,WBPDCL were prepared by the consultant and the same have been accepted by WBPDCL.

iii) Bokaro ‘B’ TPS

The revised DPRs for Unit-1, 2& 3 (3x210 MW) of Bokaro ‘B’ TPS were prepared by the consultant and sent to DVC for their comments/ acceptance on 21.03.2012. The comments/ acceptance of DVC is awaited.

9.1 Development of the Tender Procedures and Model Contract for the R&M of Fossil Fuel Based Power Plants in India.” Funded by KfW Development Bank– Germany.

The Sub-Group-I on “ Efficiency Enhancement in Fossil Based Power Plants” constituted under the Indo-German Energy Forum, in its first meeting held on 12.03.2008 identified the Development of Standard Documents for R&M Projects among the three other issues. The development of Standard Documents was envisaged to be done in two phases as under.

Phase-I Task

The objective of Phase-I activity is an assessment of tendering procedures currently being followed by public utilities in India and a review of documents used for standard R&M projects as well as the documents which have already been developed for projects financed particularly by World Bank.

Phase-II Task

The main objective of Phase-II activity is the preparation of the model documents/templates for R&M Projects in consultation with task force, power utilities & financing agencies. It is intended to apply the documents for the Energy Efficiency Programme financed by KfW.

The Phase-I Activity was carried out by the consultant M/s. Evonik Energy Services India appointed and funded by GIZ. M/s. Evonik Energy Services India submitted the report on Phase-I activity in September 2009.

A Task Force on “Development of Tender Procedures and Model Contracts for the Renovation & Modernization (R&M) of Fossil Fuel Based Power Plants in India” under the chairmanship of Member (Thermal), CEA has been constituted vide MoP letter no. 5/33/2009-S.Th. dated 29/10/2009 comprising the members from MOP,CEA, NTPC and various power utilities to carry out the Phase-II activity.

The first Meeting of task force was held on 20th November 2009 in CEA, New Delhi to discuss the report of Phase-I activity and further approach & methodology for development of the tender procedures and model contract for the R&M of fossil fuel based power plants under Phase-II activity. It was decided to carry out the activity through a consultant with KfW funding.

The MoP nominated CEA as Project Implementing Agency in December 2009 to carry out the Phase-II Activity. M/s Lahmeyer International India Pvt. Ltd has been selected as consultant through ICB route for carrying out Phase -II activity. The consulting contract was signed between CEA and M/s Lahmeyer International India Pvt.Ltd on 16.03.2012. The revised inception report was submitted on 12.07.2012 and the same is under examination.

9.2 “Coal-Fired Generation Rehabilitation Project-India” funded by World Bank.

The World Bank has financed the “Coal-Fired Generation Rehabilitation Project-India” for demonstrating Energy Efficiency Rehabilitation & Modernization (EE R&M) at coal fired generating units through rehabilitation of 640 MW of capacity across three States-West Bengal, Haryana and Maharashtra. The above project has two components:-

Component-1. Energy Efficiency R&M at Pilot Projects

This component would fund implementation of Energy Efficient R&M of 640 MW capacity comprising Bandel TPS Unit-5(210 MW) of WBPDC, Koradi TPS Unit-6(210 MW) of Mahagenco and Panipat TPS Unit-3&4 (2x110 MW) of HPGCL. The World Bank has earmarked US \$ 180 million of IBRD loan and US \$ 37.9 million of GEF grants for the Component-1.

Component-2. Technical Assistance to CEA and Utilities

The Technical Assistance component of the project is aimed at providing support in implementation of EE R&M pilots, developing a pipeline of EE R&M interventions, addressing barriers to EE R&M projects and strengthening institutional capacities of implementing agencies for improved operation and maintenance practices. The World Bank has earmarked US \$ 7.5 million GEF grant for the Component-2.

9.2.1 World Bank funded EE Pilot R&M Projects

i) Bandel TPS, (Unit-5,210 MW)

Total cost of the project is around Rs. 652 crores(based on the bidding). Fund allocation for the Bandel TPS is around US \$ 59 million (Loan) and Grant US \$ 12.45 million. The execution period of the project is 24 months as per tender document. DPR for the R&M project consisting major packages viz Main Plant Package (BTG -Boiler, Turbine & Generator), Coal Handling System Package (CHP), Ash Handling Package & Water System Package (AHP & Water), Electrical System Package have been prepared by the M/s Evonik Energy Services (Project design consultant). Cumulative expenditure incurred is Rs. 54.56 Crore.

Status of Physical Progress:

➤ BTG Package:

- Letter of Award (LOA) has been issued to M/s Doosan Heavy Industries & Construction Co. Ltd and their associate on January 10, 2012 at a total Package cost of Euro 37,584,887 and Rs 29, 09,782,849 only and the Contract has been signed on February 29, 2012.
- Kick-off meeting with M/s DHIC was held on April 02, 2012 and technical review meeting held on April 26th & 27th, 2012.

➤ CHP Package:

- WBPDC submitted the draft bid document to World Bank on 10-05-2012 for their approval. The bid document is under review by World Bank.

➤ AHP Package:

- WBPDC mentioned that the bid document for first stage bidding (RFQ stage) is under preparation and it is expected to submit to World Bank by 1st week of July, 2012 for their “No Objection”.

➤ Electrical Package:

- Bids were invited on 14-05-2012. Pre Bid meeting was held on 05-06-2012. The replies to the bidder’s queries are under preparation.

Consultancies

- **Implementation Support / Quality Assurance Consultant :**

M/s Development Consultant Pvt. Ltd.(DCPL) has been appointed as a consultant and the Contract was signed on April 10, 2012 and have started their works from 22.5.2012.

- **O&M Capacity Building:**

It is submitted that as WBPDCCL's O&M Capacity program is already undertaken under DFID Grant, the World Bank approved re-allocation of fund from O&M Capacity Building to Implementation Support/Quality Assurance Consultant service.

ii) Koradi TPS, (Unit-6,210 MW)

Total cost of the project is Rs. 486 Cr. Fund allocation for the Koradi TPS is around US \$ 59 million (Loan) and Grant US \$ 12.45 million. M/s Evonik Energy Services (Project design consultant) prepared the DPR. The same has been approved and accepted by MSPGCL Board on 26-06-2009. In-principle approval of MERC for capital expenditure had been received on 24-05-2010. The R&M project consists of four major packages BTG, Electrical, BOP & CHP.

Status of Physical Progress:

➤ BTG Package

Mahagenco is in the process of preparing technical specifications for the second stage (RFP) of bidding.

➤ Electrical Package

The Letter of Award issued to M/s ABB Ltd on March 19, 2012 and final contract was signed on March 25, 2012.

➤ BOP Package

First stage bidding completed. The agency for R&M works of the BOP package is yet to be appointed.

➤ CHP Package

Mahagenco submitted that due to closing of units 4 x 120 MW, R&M of CHP package has been cancelled.

Consultancies

- **Koradi,U-6: Implementation Support Consultant :**

The LOA issued to Tata Consulting Engineering Ltd.(TCE) on May 09, 2012 and contract was signed on May 29, 2012.

- **Koradi,U-6: Quality Assurance Consultant :**

RfP documents issued to all shortlisted consultants on November 16, 2011. Final date of proposal submission will be decided after the BTG package supplier is identified.

Status of Financial Progress :

Original Estimated Cost incl. R&M project & Consultancies (Rs. Crore) :	Rs 500.19
Cumulative expenditure incurred (Rs. Crore) :	Rs. 0.72

iii) Panipat TPS (Unit-3&4, 2x110 MW)

Total cost of the project is Rs. 448.4 Crores comprising Govt. of Haryana equity Rs. 118.36 Cr (US \$ 27 million), World Bank Loan- Rs. 272.8 Cr.(US \$ 273 million) and GEF Grant of Rs. 57.2 Cr.(US \$ 13 million). In addition to above Technical Assistance of US \$ 1.8 million under GEF Grant has been provided for seven(07) consultancies.

Status of Pilot R&M Project at Panipat TPS (Unit 3, 110 MW):-

During the meeting held on 16.07.2012 with the World Bank Mission team at HPGCL Hqs., HPGCL intimated that the HPGCL Board has decided to not to undertake the R&M work of unit-3&4 of Panipat TPS.

Consultancies

- **Project Design Consultant (Unit 3, 110 MW):**

Consultant was appointed on **03-11-2010**. Draft DPR submitted on 30-06-2011. Revised Technical Assessment Report was submitted by M/s Energo on 16-01-2012. Final DPRs are yet to be finalised by the consultant.

- **Environmental Audit & Due Diligence (EADD):**

Contract was signed on **26-11-2010** with M/s Enzen. Final report submitted on 28-09-2010. HPGCL submitted that most of the recommendations of EADD consultants have already been complied with.

- **Rapid Social Assessment (RSA):**

Contract was signed on **26-11-2010** with M/s SMEC. HPGCL submitted that SMEC started the project on August 20, 2009 and submitted final Rapid Social Assessment Report on September 27, 2010.

- **Assessment of O&M Practices:**

Bidding process is yet to be started

- **Implementation Support:**

Bidding process is yet to be started.

- **Strengthening of O&M Practices:**

The bidding process will be started subsequent to consultancy work of “Assessment of O&M Practices”.

- **Quality Assurance:**

Bidding process is yet to be started.

Status of Financial Progress :

Estimated Expenditure incl. R&M project & Consultancies (Rs Crore)	: Rs 456.32
The Cumulative expenditure (Rs Crore)	: Rs 0.43

9.2.2 Technical Assistance to CEA

The World Bank is providing technical assistance of US \$ 1.1 million as a part of GEF grant to CEA under “Coal Fired Generation Rehabilitation Project-India” for addressing the barriers to Energy Efficient R&M of coal fired generating units in India. The project is being implemented by CEA through appointment of consultants for carrying out following four studies:

- a) Review of institutional capacity and capacity strengthening interventions at CEA.
- b) Study on reduction of barriers to R&M interventions in thermal power stations in India.
- c) Study on developing markets for implementation of R&M in thermal power stations in India.
- d) Review of experience from Pilot R&M interventions in thermal power stations in India.

The cumulative expenditure incurred till date is Rs. 19.67 Lakhs.

The appointment of various consultants for carrying out the studies is under progress and the present status is as under:

Sl. No.	Consultancy services	Status as on (31.06.2012)
1.	Implementation Support Consultancy (ISC)	M/s ABPS Infrastructure was appointed as ISC on 28.10.2010 for assisting CEA in implementing the project.
2.	Study on Reduction of Barriers to R&M intervention in thermal power station in India.	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 24.04.2012. The Inception report has been submitted by M/s Mercados in June, 2012.
3.	Study on Developing Markets for implementation of R&M in thermal power stations in India	M/s Mercados Energy Market India has been appointed as a Consultant w.e.f. 14.05.2012. The Inception report has been submitted by M/s Mercados in June, 2012.
4.	Review of Experience from Pilot R&M projects	M/s WAPCOS Ltd. has been selected as a Consultant. Draft contract was signed on 18.05.2012.
5.	Review of Institutional Capacity and capacity strengthening interventions in CEA	M/s KPMG has been appointed as a Consultant on 16.07.2012. The kick-off meeting has been held on 16.07.2012.

9.3 Financial Assistance by World Bank under GEF facility as Grant for pipe line R&M projects

World Bank has made available GEF Grant for various studies viz. Project Design, Environment Audit & Due Diligence analysis (EA DDA) and Rapid Social Assessment (RSA) for carrying out LE works at various thermal units of Mahagenco. The units of Mahagenco for above mentioned studies include Bhusawal TPS, Units-2(210MW), Chandrapur TPS, Units-1&2 (2x210MW) and Parli TPS, Unit-3(210MW). The status is furnished below:

- **Rapid Social Assessment (RSA) Consultant for three plants [Chandrapur TPS (Unit-1&2, 2x210 MW), Bhusawal TPS (Unit-2, 210 MW) and Parli TPS (Unit-3, 210 MW)] :**

Contract was signed on 29-07-2011. Inception reports for RSA consultancy were submitted on August 17, 2011. Final draft report reviewed on 31-12-2011 and final report is in process.

- **Chandrapur, U-1&2: Design Consultant :**

Contract was signed on **11-10-2010**. RLA study for both units completed and EA report sent to World Bank on 13-01-2012 for their "No Objection".

- **Chandrapur, U-1&2: EADD Consultant :**

Contract was signed on **12-10-2010**. Final EADD Report has been prepared and submitted to World Bank on April 13, 2012 for their approval.

- **Bhusawal, U-2: Design Consultant :**

Contract was signed on **14-06-2011**. RLA study is completed however report is yet to be submitted by the consultant. Technical Audit report was submitted on January 13, 2012 and forwarded to World Bank.

- **Bhusawal, U-2: EADD Consultant :**

Contract was signed on **17-06-2011**. Draft EADD report is received and being reviewed by Bhusawal TPS.

- **Parli,U-3, Design Consultant :**

Contract was signed on **05-09-2011** with M/s Energo. RLA study completed and Energy Audit is in progress. Feasibility Report / DPR is awaited from the consultant.

- **Parli,U-3,EADD Consultant :**

Contract was signed on **05-08-2011** with M/s Enzen. Inception report was submitted on 18-11-2011. Further, intermediate status report was submitted on December 6, 2011 and final report is awaited.

9.4 Japan-India co-operation for Study on Efficiency and Environmental Improvement of Coal Fired Stations

A MOU between Central Electricity Authority and Japan Coal Energy Centre (JCOAL) for preliminary study of Efficiency and Environment improvement study in coal fired power plants was signed during the meeting of India-Japan high level Energy Dialogues held in New Delhi on 30.4.2010. The purpose of this MOU is to carryout necessary diagnostic activities for few candidate coal-fired power plants pertaining to Energy Efficient Renovation & Modernisation works and finding out measures to overcome barriers for promoting R&M, towards carrying out efficiency and environmental improvement of coal-fired power plants in India.

Under the MOU, JCOAL had short listed four candidate coal fired power plants viz. Ukai and Wanakbori TPS (GSECL), Ramagundem STPS (NTPC) and Vijaywada TPS (APGENCO) for pre – primary studies. JCOAL visited these stations along with experts and the final report was submitted on 6th May, 2011.

After Pre-Primary Studies, JCOAL have finalized 3 units viz., Vijaywada TPS Unit-1 (210MW) of APGENCO, Wanakbori TPS Unit-1 (200 MW) of GSECL and Kahelgaon STPS Unit-2 (210 MW) of NTPC for full-fledged diagnosis for the project on Efficiency and Environmental Improvement of Indian Coal-Fired power stations. The draft final report had been submitted on 20.04.2012 and debriefing meetings to discuss the views of NTPC, GSECL and APGENCO had been held at NTPC, Noida, Vadodara and Hyderabad on 28th May, 30th May and 2nd June, 2012 respectively.

The 2nd Phase MOU between CEA and JCOAL has been signed on 11.06.2012 for carrying out detail diagnostic study for energy efficiency oriented R&M activities in three nos. of units.

9.5 JICA Study on Renovation & modernization complete replacement of State sector old inefficient coal based thermal power station in India.

A study on Renovation & modernization complete replacement of State sector old inefficient coal based thermal power station in India was assigned to JICA by Government of India in respect of the following State sector power station:

- a) Obra A TPS Unit No. 1 to 8 (U.P) – complete replacement.
- b) Satpura TPS Unit No. 1 to 5 (M.P) – complete replacement.
- c) Bhusawal TPS Unit No. 2 & 3 (Maharashtra) – complete replacement.
- d) Parli TPS Unit No. 3 to 5 (Maharashtra) – complete replacement or R&M.

JICA had conducted site visit in the month of March-April 2012 in above all the TPS and the Final Report of their observation has been submitted on 21.06.2012.

Details of Units where LE/R&M works to be taken up during the 12th Plan

(As on 30.06.2012)

STATE SECTOR (LE Programme)

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1	U.P.	Obra	10	1977	200	S/d for LE works since 22.03.2012. Expected to synchronised by April, 2013.
2	U.P.	Obra	11	1977	200	S/d for LE works since 13.07.2011. Expected to synchronised by Nov., 2013.
3	U.P.	Obra	12	1981	200	Works shall be taken up after stabilisation of U-10&11. As per BHEL, both the units are expected to synchronised by Dec., 2014.
4	U.P.	Obra	13	1982	200	
5	U.P.	Harduaganj	7	1978	110	S/d for LE works since 05.03.2011. Expected to synchronised by 31.12.2012.
6	U.P.	Parichha	1	1984	110	Estimated cost of BTG Pkg. of R&M Scheme is Rs. 150 Crore and is to be financed by PFC & UP Govt./UPRVUNL.
7	U.P.	Parichha	2	1985	110	Estimated cost of R&M Scheme is Rs. 287 Crore (BTG works of U-2 & BOP works of U-1&2) and Scheme has been submitted to PFC for financing.
8	Punjab	Bathinda	3	1978	110	The R&M works of Unit-3 started on 14.01.2012. Boiler light up, Chemical cleaning & Steam blow out has been completed. Turbine put on barring gear on 17.6.2012, Unit stabilisation is expected by 31.07.2012.
9	Punjab	Bathinda	4	1979	110	The R&M works of unit-4 started on 05.11.2012., The boiler dismantlement work is near completion. Civil works and turbine dismantlement works started from 15.05.2012 & 22.05.2012 respectively, As per latest commitment by BHEL, unit-4 will be synchronized by 31.03.2013
10	Haryana	Panipat	3	1985	110	Proposed WB funded project. R&M through WB funding is not financially viable.
11	Haryana	Panipat	4	1985	110	
12	Maharashtra	Nashik	3	1979	210	KfW funded project. DPR approved by Mahagenco/Merc. NIT floated, evaluation in progress
13	Maharashtra	Nashik	4	1980	210	To be decided inline with Nashik U#3. Consultant for DPR preparation has been awarded..
14	Maharashtra	Koradi	5	1978	210	DPR yet to be prepared
15	Maharashtra	Koradi	6	1982	200	WB funded project. DPR approved by MSPGCL/MERC. Electrical pkg. is awarded to M/s ABB. First stage bidding completed for BTG & BOP pkg.

16	Maharashtra	Bhusawal	2	1979	210	WB funded pipeline project. RLA studies completed. DPR yet to be prepared.
17	Maharashtra	Bhusawal	3	1982	210	DPR yet to be prepared
18	Maharashtra	Chandrapur	1	1983	210	WB funded pipeline project. RLA studies completed.
19	Maharashtra	Chandrapur	2	1984	210	
20	Maharashtra	Parli	3	1980	210	WB funded pipeline project. RLA studies completed, DFR/DPR is awaited.
21	Chhattisgarh	Korba (West)	1	1983	210	RLA studies done by M/s Evonik. Preparation of tender documents is in process.
22	Chhattisgarh	Korba (West)	2	1984	210	
23	M.P.	Satpura	6	1979	200	DPR prepared by NTPC at an estimated cost of Rs.2100Cr. Utility is exploring the possibility of carrying out LE works through LROT. However, need based R&M works are planned during AOH.
24	M.P.	Satpura	7	1979	210	
25	Tamilnadu	Tuticorin	1	1979	210	Scope of work finalised at estimated cost of Rs. 129 Cr. Work other than main plant is in progress
26	Tamilnadu	Tuticorin	2	1980	210	Scope of work finalised at estimated cost of Rs. 150 Cr. Work other than main plant is in progress
27	A.P.	Dr. N.T. TPS (Vijaywada)	1	1979	210	77 activities were taken up at an estimated cost of Rs. 193.83 Cr. Anticipated completion by 31.12.2013.
28	A.P.	Dr. N.T. TPS (Vijaywada)	2	1980	210	
29	Karnataka	Raichur	1	1985	210	
30	Karnataka	Raichur	2	1986	210	
31	Bihar	Barauni	6	1983	110	LOA awarded on 15.02.2010. Unit under s/d since 17.03.2012.As per BHEL commitment, synchronisation by March 2013.
32	Bihar	Barauni	7	1985	110	R&M in progress. Boiler lightup by 30.07.2012 & synchronisation by March, 2013.
33	Bihar	Muzaffarpur	1	1985	110	LOA awarded on 15.04.2010. boiler lightup & turbine boxup completed. Synchronisation is expected by August, 2012.
34	Bihar	Muzaffarpur	2	1986	110	S/d taken on 29.03.2012. R&M works under progress. Synchronisation is expected by Jan., 2013.
35	W.Bengal	Kolaghat	1	1990	210	KfW funded project.DPR preparedand accepted by WBPDC.
36	W.Bengal	Kolaghat	2	1985	210	To be decided inline with Kolaghat U#1
37	W.Bengal	Kolaghat	3	1984	210	To be decided inline with Kolaghat U#1
38	W.Bengal	Bandel	5	1982	210	WB funded project. BTG pkg. LOA awarded to M/s DHIC on 10.1.2012 and contract had been signed on 29.2.2012 at an estimated cost of Rs. 291 Cr.
Sub Total State Sector (LE)			38		6820	

STATE SECTOR (R&M Programme)

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Capacity (MW)	Present status
1	U.P.	Obra	7	1974	100	S/d since 01.07.2010. Dismantling works completed, erection started since 3.6.2011. Expected synchronisation as per L-2 schedule is 14.11.2012.
2	U.P.	Anpara	1	1986	210	Estimated cost of R&M is Rs. 856 Cr. Financed by PFC and UPRVUNL. Work is to be by BHEL, OEM. Order yet to be placed.
3	U.P.	Anpara	2	1986	210	
4	U.P.	Anpara	3	1988	210	
5	U.P.	Anpara'B	4	1993	500	R&M works are being executed by M/s BHEL & M/s MITSUI, Japan. The total cost of scheme is Rs. 691.97 crore of which loan agreement to Rs. 553.576 Crore has been finalised by PFC and remaining Rs. 138.394 Crore from Internal resources. Expected completion by Sept.,2013.
6	U.P.	Anpara'B	5	1994	500	
7	Punjab	Ropar	1	1984	210	Utility decided to do need based R&M at estimated expend. of Rs 55 Cr.
8	Punjab	Ropar	2	1985	210	
9	Punjab	Ropar	5	1992	210	Utility decided to do need based R&M at estimated expend. of Rs 6.5 Cr.
10	Punjab	Ropar	6	2001	210	
11	Haryana	Panipat	5	1993	210	RLA studies done. Scope of work finalised.
12	Gujarat	Wanakbori	1	1982	210	Utility decided to do need based R&M. Works for upgrading of C&I system has already been awarded.
13	Gujarat	Wanakbori	2	1983	210	
14	Gujarat	Ukai	3	1979	200	Utility decided to do need based R&M
15	Gujarat	Ukai	4	1979	200	Utility decided to do need based R&M
16	Rajasthan	Kota	1	1983	110	RRVUNL has identified 10 nos.schemes at an approx expenditure of Rs 285 Cr. and in principal approval has been sought from regulators.
17	Rajasthan	Kota	2	1983	110	
18	Jharkhand	Patratu	9	1984	110	R&M is under progress by M/s BHEL. Synchronisation of U-9 is expected by Jan.,2013.
19	Jharkhand	Patratu	10	1986	110	Test synchronised on 24.05.2012 at 75-80 MW load. COD yet to be achieved.
20	W.Bengal	DPL	6	1985	110	Synchronised on 07.05.2012.
Sub Total State Sector (R&M)			20		4150	

Total State sector (LE+R&M)
58
10970

CENTRAL SECTOR (LE Programme)**Coal Based**

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present Status
1	DVC	Bokaro 'B'	1	1986	210	Considered under KfW funded project. DPRs were prepared by M/s Evonik. Acceptance from DVC is awaited.
2	DVC	Bokaro 'B'	2	1990	210	
3	DVC	Bokaro 'B'	3	1993	210	
4	DVC	Durgapur	4	1982	210	Under process of retendering of mainplant R&M. Switchyard & ESP renovation in progress.
5	NTPC	Badarpur	4	1978	210	
6	NTPC	Badarpur	5	1981	210	Under investment approval
7	NTPC	Singrauli STPS	1	1986	200	
8	NTPC	Singrauli STPS	2	1987	200	
9	NTPC	Singrauli STPS	3	1983	200	
10	NTPC	Singrauli STPS	4	1983	200	
11	NTPC	Singrauli STPS	5	1984	200	
12	NTPC	Korba STPS	1	1983	200	Under investment approval
13	NTPC	Korba STPS	2	1983	200	
14	NTPC	Korba STPS	3	1984	200	
15	NTPC	Ramagundam STPS	1	1984	200	Investment approval accorded
16	NTPC	Ramagundam STPS	2	1984	200	
17	NTPC	Ramagundam STPS	3	1984	200	
Sub total C. S (LE)			17		3460	

R&M Programme

S.N.	Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1	NTPC	Singrauli STPS	6	1986	500	Investment approval accorded. Scheme under tendering process
2	NTPC	Singrauli STPS	7	1987	500	
3	NTPC	Korba STPS	4	1987	500	Investment approval accorded. Scheme under tendering process
4	NTPC	Korba STPS	5	1988	500	
5	NTPC	Korba STPS	6	1988	500	
6	NTPC	Ramagundam STPS	4	1988	500	Investment approval accorded. Scheme under tendering process
7	NTPC	Ramagundam STPS	5	1989	500	
8	NTPC	Ramagundam STPS	6	1989	500	
9	NTPC	Farakka Stage-II	4	1992	500	Under tendering stage, all necessary approvals are in place
10	NTPC	Farakka Stage-II	5	1994	500	
11	NTPC	Tanda	2	1989	110	Under S/d since 29.06.2012.
12	NTPC	Unchahar	1	1988	210	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
13	NTPC	Unchahar	2	1989	210	
14	NTPC	Unchahar	3	1999	210	
15	NTPC	Unchahar	4	1999	210	
16	NTPC	Vindhyachal	1	1987	210	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
17	NTPC	Vindhyachal	2	1988	210	
18	NTPC	Vindhyachal	3	1989	210	
19	NTPC	Vindhyachal	4	1989	210	
20	NTPC	Vindhyachal	5	1990	210	
21	NTPC	Vindhyachal	6	1991	210	
22	NTPC	Vindhyachal	7	1999	500	
23	NTPC	Vindhyachal	8	2000	500	

24	NTPC	Simhadri	1	2002	500	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
25	NTPC	Simhadri	2	2002	500	
26	NTPC	Talchar STPS	1	1995	500	Under tendering stage, all necessary approvals are in place
27	NTPC	Talchar STPS	2	1996	500	
28	NTPC	Dadri	1	1991	210	Under tendering stage, all necessary approvals are in place
29	NTPC	Dadri	2	1992	210	
30	NTPC	Dadri	3	1993	210	
31	NTPC	Dadri	4	1994	210	
32	NTPC	Rihand STPS Ph III	1	1988	500	Scheme finalised. Investment approval accorded. Schemes under tendering stage.
33	NTPC	Rihand STPS Ph III	2	1989	500	
34	NTPC	Kahalgaon	1	1992	210	Under tendering stage, all necessary approvals are in place
35	NTPC	Kahalgaon	2	1994	210	
36	NTPC	Kahalgaon	3	1995	210	
37	NTPC	Kahalgaon	4	1996	210	
Sub total C.S. (R&M)			37		12890	
Sub total C.S. Coal Based (LE + R&M)			54		16350	

Central Sector LE (Gas based)

S.N.	State	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Present status
1		Dadri GT	GT-1	1991	131	Under tendering stage, all necessary approvals are in place
2		Dadri GT	GT-2	1991	131	
3		Dadri GT	GT-3	1991	131	
4		Dadri GT	GT-4	1991	131	
5		Auraiya GT	GT-1	1989	111.19	Under tendering stage, all necessary approvals are in place
6		Auraiya GT	GT-2	1989	111.19	
7		Auraiya GT	GT-3	1989	111.19	
8		Auraiya GT	GT-4	1989	111.19	
9		Kawas GT	GT-1	1992	106	Awarded to M/s GE on 23/03/12
10		Kawas GT	GT-2	1992	106	
11		Kawas GT	GT-3	1992	106	
12		Kawas GT	GT-4	1992	106	
13		Gandhar GT	GT-1	1994	131	Awarded to M/s Alstom on 16.05.2012.
14		Gandhar GT	GT-2	1994	131	
15		Gandhar GT	GT-3	1994	131	
Sub Total Gas (LE)			15		1785.8	

CENTRAL SECTOR R&M (Gas Based)

CENTRAL SECTOR R&M (Gas Based)						The scope of work finalised. The proposals are in advance stage of approval for Rs. 102.25 Cr., completion is expected by March, 2014. For upgradation of control system of unit-4, orders for Rs. 4.14 Cr. Placed, materials received at site, completion is expected by Oct., 2012.
1	NEEPCO	Kathalguri CCGT	GT-1	1995	33.50	
2		Kathalguri CCGT	GT-2	1995	33.50	
3		Kathalguri CCGT	GT-3	1995	33.50	
4		Kathalguri CCGT	GT-4	1995	33.50	
5		Kathalguri CCGT	GT-5	1996	33.50	
6		Kathalguri CCGT	GT-6	1996	33.50	
7		Kathalguri CCGT	ST-1	1998	30.00	
8		Kathalguri CCGT	ST-2	1998	30.00	
Sub Total Gas (R&M)			8		261	

Sub total Gas in C.S. (LE + R& M) 23 2046.8

Total R&M + LE 135 29367

Details of Units Programmed for LE Works during 2012-13 of 12th Plan**A. State Sector****Status as on 30-06-2012**

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Comm.	Cap. (MW)	Completion Schedule (Actual / Targeted)	Present status / Expected Date of Completion
Punjab							
1	PSEB	Bathinda	3	1978	110	2012-13 (Target)	Boiler lightup, Acid cleaning & Steam blow out activity work compltd. Turbine put on barring gear on 17.06.2012. Synchronisation expected by July 2012.
Bihar							
2	BSEB	Barauni	7	1985	110	2012-13 (Target)	LOA has been awarded to BHEL on 15th Feb.2010 under Rashtriya Sam Vikas Yojana. R&M works of U-7 is in progress and unit synchronization is expected by March, 2013 as per the commitment of M/s BHEL in the review meeting of Secretary, MHI.
3	KBUNL	Muzaffarpur	1	1985	110	2012-13 (Target)	LOA awarded on 15.04.10 under RSVY. Boiler hydro test & turbine box up completed. As per BHEL synchronization is expected by August, 2012.
4	KBUNL	Muzaffarpur	2	1985	110	2012-13 (Target)	Unit 2 has been handed over to BHEL on 29.03.2012 for R&M works and expected to be synchronized by Jan., 2013.
Total of State Sector (A)			4		440		
Total Central Sector (B)			-		-		
Grand Total (A+B)			4		440		

Details of Units Programmed for R&M Works during 2012-13 of 12th Plan

A. State Sector

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Commissioning	Capacity (MW)	Completion Schedule (Actual / Targeted)	Present Status
1	UPRUVNL	Obra	7		100	2012-13 (Target)	E&C works started on 03.06.2011. completion expected by Nov., 2012.
2	WB	DPL	6		110	2012-13 (Target)	Synchronised on 07.05.2012.
3	JSEB	Patratu	9		110	2012-13 (Target)	R&M is under progress by M/s BHEL. Synchronisation of U-9 is expected by Jan., 2013.
4		Patratu	10		110	2012-13 (Target)	Test synchronised on 24.05.2012 at 75-80 MW load. COD yet to be achieved.
Total of State Sector (A)			4		430		

B. Central Sector

Sl. No.	Name of Utility	Name of Station	Unit No.	Year of Commissioning	Capacity (MW)	Completion Schedule (Actual / Targeted)	Present Status
1	NTPC	Tanda	2	1989	110	2012-13 (Target)	Work in progress.
9		Kawas GT-1A	1	1992	106		Awarded to M/s GE on 23.03.2012. Work in progress.
Total Central Sector (B)			2		216		
Total of R&M (A+B)			6		646		