

RENOVATION, MODERNISATION & UPRATING OF HYDRO ELECTRIC POWER PROJECTS

Introduction

For optimization of resources and to tide over the shortage of electricity in the country, Renovation & Modernisation, Life Extension and Up-rating (RM&U) of the existing old hydro electric power projects is considered a cost effective option to ensure efficiency, better availability and also to augment capacity addition.

Recognising 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 thereafter 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 XIth Plan, i.e. March, 2012.

Under the hydro R&M programme, 65 (15 in Central and 50 in State Sector) hydro R&M schemes (13 upto the VIIIth Plan, 20 in the IXth Plan & 32 in the Xth Plan) with an installed capacity of 10511 MW at a cost of Rs. 1726 crores have been completed by the end of the Xth Plan (i.e. by 31st March 2007) & have accrued a benefit of 2351 MW through Life Extension, Up-rating and Restoration.

At the beginning of the XIth Plan (i.e. in May/June, 2007) a total of 62 hydro R&M schemes were programmed with an installed capacity of about 11340 MW at an estimated cost of Rs. 4035 Crs. to accrue a benefit of about 4393 MW through Life Extension, Up-rating and Restoration. During Dec., 2007, two (2) hydro R&M schemes of Rajasthan having Inter-State issues viz. Rana Pratap Sagar & Jawahar Sagar were dropped due to disagreement between Rajasthan and Madhya Pradesh. Further, three (3) schemes of APGENCO namely Hampi, Machkund and Tungbhadra, one scheme of TNEB namely Sholayar-I & one scheme of KPCL namely Bhadra were shifted to XIIth Plan on the request of Project Authorities as the generating units were running satisfactorily. Also, one scheme of BBMB namely Dehar was split into two schemes Dehar, Ph.A and Dehar, Ph.B. Thus during the XIth Plan, a total of 56 hydro R&M schemes having an installed capacity of about 10810 MW at an estimated cost of Rs. 4203 Crores were programmed to accrue a benefit of about 4099 MW through Life Extension, Up-rating and Restoration. However, As per the outcome of discussions held with various utilities in CEA during 2010-11, 26 hydro R&M schemes of XIth Plan, out of earlier programmed 56 schemes, having an installed capacity of 2178 MW have been shifted to XIIth Plan and 2 R&M schemes of XIth Plan namely Salal-II of NHPC & Ramganga of UJVNL have been dropped from the R&M Programme. NHPC informed that M/s. BHEL i.e. the OEM expressed reservations about up-rating of the units as such it has been decided that the repair /replacement of underwater parts shall be done under annual O&M. Ramganga R&M scheme has been dropped by UJVNL as the units are operating satisfactorily. Besides these balance 28 Ongoing schemes of XIth, one scheme of KPCL namely Bhadra of XIIth plan got completed during XIth plan. **Thus a total of 29 schemes having an installed capacity of 8032 MW at an estimated cost of 1527 Crs. which will accrue benefit of 2029 MW, were planned for implementation during the XIth Plan.**

During the Annual review meetings held in CEA during Feb./March, 2011 with various utilities, Out of above 29 schemes, a total of 20 schemes having an installed capacity of 5818 MW at an estimated cost of 513 Crs. which will accrue benefit of about 506 MW were planned for implementation during the XIth Plan. Further, 9 schemes of XIth Plan were shifted to XIIth Plan due to delay in completion of R&M works. One scheme of MSPGCL namely Koyna St-III of XIIth Plan got completed during XIth plan. MSPGCL informed that it shall carry out the balance works of replacement of governing system under annual O&M. Thus, a total of 21 schemes having an installed capacity of 6173 MW at an estimated cost of Rs. 530 crs. which will accrue benefit of about 826MW shall now be completed during the XIth plan.

Out of these 21 schemes, 17 schemes (4 in central sector & 13 in state sector) with an installed capacity of 4803 MW at a cost of about Rs. 250 Crs. have been completed upto September, 2011 and have accrued a benefit of 715 MW through Life Extension, Upgrading and Restoration. The R&M works on balance 4 Ongoing schemes are under progress. The state wise list of these 21 hydro R&M schemes is given at Annex.IV

A total of 41 hydro R&M schemes (5 in Central Sector and 36 in State Sector) having an installed capacity of 4971 MW at an estimated cost of 4488 Crs. which will accrue benefit of about 3750 MW are now planned for implementation during the XIIth Plan instead of earlier programmed 35 hydro R&M schemes. These include 9 spillover schemes of XIth plan. 2 R&M schemes have been dropped from XIIth plan namely Gandhi Sagar of MPPGCL and Subernrekha of JSEB as presently the units are operating satisfactorily and the need based R&M works shall now be completed under annual O&M. The state wise list of these 41 hydro R&M schemes is given at Annex. V.

Note: Installed capacity, Benefit & cost figures are rounded to nearest zero.

Brief Summary of Hydro R&M Schemes (As on 31.12.2011)

I Hydro R&M schemes completed up to Xth Plan :

Sl. No	Plan Period	No. of Projects			Installed Capacity (MW)	Estimated Cost (Rs. in Crs.)	Actual Expenditure (Rs. in Crs.)	Benefit (MW)
		Central Sector	State Sector	Total				
1.	Upto VIIIth Plan Schemes completed	2	11	13	1282.00	125.57	127.37	429.00 [39.00(U) + 336.00(Res.) + 54.00(LE)]
2.	IXth Plan Schemes completed	8	12	20	4892.10	597.84	570.16	1093.03 [339.00(U) + 331.03(Res.) + 423.00(LE)]
3.	Xth Plan Schemes completed	5	27	32	4336.60	1016.31	1028.97	829.08 [123.40(U) + 701.25 (LE) + 4.43(Res.)]

II -A Hydro R&M schemes planned during XIth Plan (As on 1.04.2007)

No. of Projects			Installed Capacity (MW)	Estimated Cost (Rs. in Crs.)	Benefit (MW)
Central Sector	State Sector	Total			
9	53	62	11339.60	4034.75	4393.45

II -B Hydro R&M schemes planned during XIth Plan (As on 31.12.2011)

Sl. No	Plan Period	No. of Projects			Installed Capacity (MW)	Estimated Cost (Rs. in Crs.)	Actual Expenditure (Rs. in Crs.) (Till date)	Benefit (MW)
		Central Sector	State Sector	Total				
a)	Programmed (Revised)	4	17	21	6138.80	529.52	362.28	826.00 [61.00(U) + 750.00(LE) + 15.0(Res.)]
b)	Completed	4	13	17	4803.20	322.37	239.17	715.00 [10.00(U)+15 (Res.) 690.00(LE)]
c)	Ongoing	-	4	4	1335.60	207.15	123.11	111.00 [51.00(U) + 60.00(LE) +

III Candidate Hydro R&M schemes for XIIth Plan :

Sl. No	Plan Period	No. of Projects			Installed Capacity (MW)	Estimated Cost (Rs. in Crs.)	Actual Expenditure (Rs. in Crs.)	Benefit (MW)
		Central Sector	State Sector	Total				
a)	Programmed	5	36	41	4928.80	3870.90	772.26	3743.45 [212.25(U) + 3516.20(LE) + 15.00(Res.)]
d)	Ongoing	4	14	18	2852.30	1673.38	760.40	1849.70 [155.00(U) + 1679.70(LE) + 15.0(Res.)]
e)	Under Tendering	1	14	15	1372.75	1717.65	11.82	1408.75 [36.00(U) + 1372.75(LE)]
f)	Under DPR Finalisation	-	5	5	363.75	419.93	0.04	385.00 [21.25(U) + 363.75(LE)]
g)	Under RLA Studies	-	3	3	340.00	59.94	-	100.00 [100.00(LE)]

Abbreviations: MW – Mega Watt; Res. – Restoration; U – Uprating; LE – Life Extension

State wise List of Hydro RM&U schemes completed upto the VIIIth Plan

. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Himachal Pradesh								
1.	Bairasiul, NHPC	CS	3x60	25.98	25.98	18.00 (U)	RM&U	1991-92
2.	Giri, HPSEB	SS	2x30	9.85	7.90	6.00 (U)	RM&U	1995-96
Punjab								
3.	UBDC-I, PSEB	SS	3x15	11.00	8.00	11.00 (Res)	R&M+Res.	1990-92
Uttar Pradesh								
4.	Rihand, UPJVNL	SS	6x50	1.43	1.43	100.00 (Res)	R&M+Res.	1995-96
Karnataka								
5.	Nagjhari, U-2, KPCL	SS	1x135	11.97	11.32	15.00 (U)	RM&U	1995-96
6.	Shivasamudra m, VVNL	SS	6x3 + 4x6	8.00	8.00	18.00 (LE)	RM&LE (3 MW Units)	N.A.
Kerala								
7.	Sholayar, KSEB	SS	3x18	7.58	7.58	-	R&M	1996-97
Tamil Nadu								
8.	Kadamparai (Units 3&4), TNEB	SS	2x100	23.17	33.69	200.00 (Res)	R&M+Res.	1993-95
9.	Kundah III (Units 1&2), TNEB	SS	2x60	5.45	3.20	-	R&M	1991-92
10.	Moyar, TNEB	SS	3x12	1.62	1.30	36.00 (LE)	RM&LE	1990-91
11.	Sholayar-I, TNEB	SS	2x35	1.40	0.85	-	R&M	1994-95
Meghalaya								
12.	Khandong, U-1, NEEPCO	CS	1x25	0.62	0.62	25.00 (Res)	R&M+Res.	1991-92
Tripura								
13.	Gumti, TSECL	SS	3x5	17.50	17.50	-	R&M	1994-95
	Total		1282.00	125.57	127.37	429.00 [39.0 (U) + 336.0 (Res) + 54.0(LE)]		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

State wise List of Hydro RM&U schemes completed in the IXth Plan

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Himachal Pradesh								
1.	Bhakra RB, BBMB	CS	5x132	88.45	90.68	125.00 (U)	RM&U	2000-01
2.	Dehar U-2, BBMB	CS	1x165	10.74	10.74	25.00 (Res.)	R&M+Res.	1998-99
3.	Bairasiul, NHPC	CS	3x66	18.45	18.45	-	R&M	2000-01
4.	Bassi, HPSEB	SS	4x15	5.35	4.3446	-	R&M	2000-01
Jammu & Kashmir								
5.	Salal St.I, NHPC	CS	3x115	51.50	51.50	-	R&M	2000-01
6.	Chenani, J&KPDC	SS	5x4.66	11.00	11.00	0.93 (Res)	R&M+Res.	2000-01
Punjab								
7.	Ganguwal, U-2, BBMB	CS	1x24.2	18.90	15.00	22.00 (LE)+ 2.20 (Res)	RM&LE+ Res.	1997-98
8.	Kotla, U-3, BBMB	CS	1x24.2	18.90	16.90	22.00 (LE)+ 2.20 (Res)	RM&LE+ Res.	1998-99
9.	Ganguwal U-3, BBMB	CS	1x24.2	25.00	43.40	22.00 (LE)+ 2.20 (Res)	RM&LE+ Res.	2000-01
10	Kotla U-2, BBMB	CS	1x24.2	25.00		22.00 (LE)+ 2.20 (Res)	RM&LE+ Res.	2001-02
Uttarakhand								
11	Chilla U-1, 3& 4, UJVNL	SS	3x36	4.25	4.1136	-	R&M	1998-99
12	Tiloth, UJVNL	SS	3x30	8.02	5.513	6.00 (U)	RM&U	1998-99
Andhra Pradesh								
13	Lower Sileru, APGENCO	SS	4x115	13.35	9.30	24.00 (Res)	R&M+Res.	2001-02
14	Srisaillam, APGENCO	SS	7x110	16.32	11.40	-	R&M	2001-02
Karnataka								
15	Sharavathy, U-1 to 8, KPCL	SS	8x89.1	65.00	63.49	178.20 (Res) + 115.20 (U)	RM&U +Res.	1997-98
16	Sharavathy, U-9&10, KPCL	SS	2x89.1	17.96	14.68	19.10 (Res) + 28.80(U)	RM&U +Res.	1997-98
Orissa								
17	Hirakud-I, U1&2, OHPC	SS	2x37.5	95.10	95.10	24.00(U) + 75.00(LE)	RMU&LE	1997-98

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Gujarat								
18	Ukai, U-1&3, GSECL	SS	2x75	24.99	24.99	75.00 (Res)	R&M+Res.	1997-98
Maharashtra								
19	Koyna I&II, MSPGCL	SS	4x65+ 4x75	74.91	74.91	40.00 (U) + 260.00 (LE)	RM&U of St-I & II & LE of St-I	1999-2000
20	Koyna III, U-10, 11 &12, MSPGCL	SS	3x80	4.65	4.65	-	R&M	1997-98
	Total		4892.10	597.84	570.16	1093.03 [339.0(U) + 331.03(Res) +423.0(LE)]		

Abbreviations: R&M – Renovation & Modernisation;. U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

State wise List of Hydro RM&U schemes completed in the Xth Plan

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of completion
				(Rs. in Crs.)				
Himachal Pradesh								
1.	Pong, BBMB	CS	6x60	17.70	17.79	36.00 (U)	RM&U	2003-04
Punjab								
2.	Ganguwal,U-1, BBMB	CS	1x29.25	51.28 (incl. IDC 6.28)	81.9935	25.89 (LE) +2.10 (Res)	RM&LE+Res.	2006-07
3.	Kotla, U-1, BBMB	CS	1x29.25	51.28 (incl. IDC 6.28)		26.61 (LE) +2.33 (Res)	RM&LE + Res.	2006-07
4.	Shanan Ph.A, PSEB	SS	4x15+ 1x50 \$	11.35	10.93	-	R&M	2003-04
5.	Shanan, Ph.B, PSEB	SS	4x15+ 1x50 \$	35.95	13.34	60.00 (LE)	RM&LE (LE for 15 MW units + R&M for 50 MW unit)	2006-07
6.	Anandpur Sahib, PSEB	SS	4x33.5	3.68	1.04	-	R&M	2006-07
7.	UBDC I&II, PSEB	SS	3x15 + 3x15.45	7.89	2.44	45.00 (LE)	RM&LE (LE for 3x15 MW & R&M for 3 x 15.45 MW	2006-07
8.	Mukerian St.I, PSEB	SS	3x15	6.04	4.38	-	R&M	2006-07
Uttarakhand								
9.	Chibro, UJVNL	SS	4x60	10.45	10.52	-	R&M	2006-07
Karnataka								
10.	Nagjhari, U-1&3, KPCL	SS	2x135	26.12	21.62	30.00 (U)	RM&U	2002-03
11.	Supa PH, KPCL	SS	2x50	2.64	2.47	-	R&M	2002-03

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
12	Mahatma Gandhi, VVNL	SS	4x12+4x18	44.66	43.13	19.20 (U)+120.00 (LE)	RMU&LE	2002-03
13	Munirabad, VVNL	SS	2x9+1x10.3	3.64	3.53	28.30 (LE)	RM&LE	2002-03
14	Mani Dam, KPCL	SS	2x4.5	1.00	1.00	-	R&M	2002-03
15	Shivasamudram, VVNL	SS	6x3+4x6	68.38	73.17	42.00 (LE)	RM&LE	2004-05
16	Bhadra, Ph.II, KPCL	SS	1x2	3.30	2.51	2.00 (LE)	RM&LE	2005-06
17	Varahi, KPCL	SS	2x115	2.57	2.66	-	R&M	2006-07
18	Sharavathy, Ph.A, KPCL	SS	10x103.5	5.22	3.52	-	R&M	2006-07
Kerala								
19	Neriamangalam KSEB	SS	3x15	58.00	53.05	45.00 (LE) + 9.00 (U)	RMU&LE	2006-07
20	Pallivasal, KSEB	SS	3x5+3x7.5	94.00	371.71	37.50 (LE)	RM&LE	2002-03
21	Sengulam, KSEB	SS	4x12	114.00		48.00 (LE)	RM&LE	2002-03
22	Panniar, KSEB	SS	2x15	62.00		30.00 (LE)	RM&LE	2002-03
Tamilnadu								
23	Pykara, TNEB	SS	3x6.65+1x11+2x14	26.06	20.147	58.95(LE)	RM&LE	2004-05
24	Papanasam, TNEB	SS	4x7	27.05	22.61	4.00 (U) + 28.00 (LE)	RMU&LE	2005-06
Orissa								
25	Hirakud-I (Sw.yard), OHPC	SS		9.85	15.88	-	R&M	2006-07
26	Hirakud-I, U-3&4, OHPC	SS	2x24	126.14	108.86	16.00(U)+48.00(LE)	RMU&LE	2005-06
West Bengal								
27	Maithon, U-2, DVC	CS	1x20	42.08	36.94	20.00(LE)+3.20(U)	RMU&LE	2004-05

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of completion
				(Rs. in Crs.)				
Maharashtra								
28	Bhira Tail Race, MSPGCL	SS	2x40	1.60	0.70	-	R&M	2003-04
29	Tillari, MSPGCL	SS	1x60	4.50	4.24	6.0 (U)	RM&U	2004-05
30	Koyna Gen. Complex, MSPGCL	SS	4x70+4x80+4x80	12.00	11.50	-	R&M	2004-05
Meghalaya								
31	Umium St.I MeSEB	SS	4x9	81.88	84.21	36.00 (LE)	RM&LE	2002-03
32	Khandong, NEEPCO	CS	2x25	4.00	3.3499	-	R&M	2003-04
	Total		4336.60	1016.31	1028.9704	829.08 [123.40(U) +701.25 (LE) + 4.43(Res.)]		

\$ - Installed Capacity of Shanan, Ph.B, at Sl. No. 5 not included in the total, as the same has already been accounted for at Sl. No. 4.

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

State wise List of Completed/Ongoing Hydro RM&U schemes programmed for
Implementation during the XIth Plan

As on 31.12.2011

S. No	Project, Agency	CS/SS	Inst. Cap. (MW)	Estimated Cost	Actual Expenditure	Benefits (MW)	Category	Completion Schedule
				(Rs. in Crs.)				
Completed Schemes								
Himachal Pradesh								
1.	Dehar Ph. A BBMB	CS	6x165	11.00	6.936		R&M	2010-11 Completed
2.	Dehar Ph. B BBMB	CS	6x165\$	49.00	24.454	330 (LE)	RM&LE	2009-10 Completed
Uttarakhand								
3	Tanakpur, NHPC	CS	3x31.4	10.77	11.95	-	R&M	2007-08 Completed
4	Khodri Ph.A UJVNL	SS	4x30	5.25	6.39	-	R&M	2008-09 Completed
5	Chilla Ph.A, UJVNL	SS	4x36	23.55	21.24	-	R&M	2008-09 Completed
Andhra Pradesh								
6	Upper Sileru, APGENCO	SS	4x60	4.20	3.34	-	R&M	2009-10 Completed
Karnataka								
7	Nagjhari, U1 to 6, KPCL	SS	5x150 + 1x135	14.75	15.31	-	R&M	2009-10 Completed
8	Sharavathy Ph.B, KPCL	SS	10x103.5	20.50	11.14	-	R&M	2009-10 Completed
9	Supa, KPCL	SS	2x50	3.45	4.90	-	R&M	2009-10 Completed
10	Bhadra, KPCL	SS	2x12	1.44	0.85	-	R&M	2009-10 Completed
11	Lingnamakki, KPCL	SS	2x27.5	3.81	2.62	-	R&M	2010-11 Completed
Tamil Nadu								
12	Mettur Dam, TNEB	SS	4x10	30.17	24.16	10 (U) + 40 (LE)	RMU&LE	2007-08 Completed
Maharashtra								
13	Koyna St.I & II, MSPGCL	SS	4x70 + 4x80	87.50	81.82	-	R&M	2008-09 Completed
14	Vaitarna, MSPGCL	SS	1x60	16.00	0.14	-	R&M	2009-10 Completed
15	Koyna Dam PH, MSPGCL	SS	2x18	5.78	0.25	-	R&M	2009-10 Completed
16	Koyna St.III, MSPGCL	SS	4x80	16.65	5.79	320 (LE)	RM&LE	2011-12 Completed
Manipur								
17.	Loktak, NHPC	CS	3x30 derated	18.55	17.88	15.00 (Res.)	R&M + Res.	2011-12 Completed
Sub Total(A)			4803.20	322.37	239.17	715.00		

S. No	Project, Agency	CS/SS	Inst. Cap. (MW)	Estimated Cost	Actual Expendit -ure	Benefits (MW)	Category	Completion Schedule
				(Rs. in Crs.)				
Ongoing Schemes – Under implementation								
Himachal Pradesh								
18	Bassi, HPSEB	SS	3x16.5+ 1x15	119.83	109.97 (as on 31.12.12)	6.0(U)+ 60 (LE)	RMU&LE	2011-12
Andhra Pradesh								
19	Lower Sileru, APGENCO	SS	4x115	8.75	6.42 (as on 28.02.11)	-	R&M	2011-12
20	Nagarjuna Sagar, APGENCO	SS	1x110+ 7x100.8	33.35	13.90 (as on 28.02.11)	-	R&M	2011-12
Karnataka								
21	Nagjhari, U-4to6, KPCL	SS	2x150+ 1x135 \$	45.22	51.99 (as on 31.12.11)	45.00 (U)	RM&U	2011-12
	Sub-Total(B)		1370.10	207.15	182.28	111.00		
	Total(A+B)		6173.30	529.52	421.45	826.00 [61.00(U) + 750.00 (LE) + 15.0(Res.)]		

\$ - Installed Capacity for Dehar (Ph.b) at Sl. No.2 & Nagjhari (U-4 to 6) at Sl. No.20 are not included in the total as the same has already been accounted for at Sl. Nos. 1 and 7 respectively.

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

State wise List of Hydro RM&U schemes for completion in the XIIth Plan

As on 31.12.2011

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost (Prov.)	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Ongoing Schemes – Under implementation								
Himachal Pradesh								
1	Bhakra LB, BBMB	CS	5x108	489.77	222.15 (as on 31.12.11)	540.00 (LE) + 90.00 (U)	RMU&LE	2012-13
Jammu & Kashmir								
2	Chenani, J&KPDC	SS	5x4.66	39.14	3.49 (as on 31.12.10)	23.30 (LE)	RM&LE	2012-13
3	Sumbal Sindh, J&KPDC	SS	2x11.3	25.60	13.10 (as on 31.12.10)	-	R&M	2012-13
4	Lower Jhelum, J&KPDC	SS	3x35	101.30	68.45 (as on 31.12.10)	15.00 (Res.)	R&M+ Res.	2012-13
Uttar Pradesh								
5	Obra, UPJVNL	SS	3x33	31.70	11.454 (as on 31.03.11)	99.00 (LE)	RM&LE	2013-14
6	Rihand, UPJVNL	SS	6x50	132.20 (Rev.)	62.615 (as on 31.12.11)	300.00 (LE)	RM&LE	2012-13
Uttarakhand								
7	Pathri, UJVNL	SS	3x6.8	71.59	11.27 (as on 31.12.11)	20.40 (LE)	RM&LE	2013-14
Andhra Pradesh								
8	Srisailem RB, APGENCO	SS	7x110	16.70	13.36 (as on 28.02.10)	-	R&M	2012-13
Kerala								
9	Sabirigiri, KSEB	SS	5x55+ 1x60	104.36	96.95 (as on 31.12.10)	300.00 (LE) + 35.00(U)	RMU&LE	2012-13
10	Idamalayar, KSEB	SS	2x37.5	11.70	5.45 (as on 31.12.10)	-	R&M	2012-13
11	Poringal-kuthu, KSEB	SS	4x8	9.55	2.34 (as on 31.12.10)	32.00 (LE)	RM&LE	2013-14
Tamil Nadu								
12	Periyar, TNEB	SS	3x35+ 1x42	161.18	108.77 (as on 31.12.11)	140.00 (LE) + 28.00(U)	RMU&LE	2013-14

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
West Bengal								
13	Maithon, U-1&3, DVC	CS	2x20	49.05	3.76 (as on 31.03.10)	40.00 (LE)	RM&LE	2013-14
14	Jaldhaka St.I, WBSEB	SS	3x9	88.62	74.15 (as on 31.12.11)	27.00(LE)	RM&LE	2012-13
Orissa								
15	Rengali OHPC	SS	1x50	47.50	14.52 (as on 31.12.11)	50(LE)	RM&LE	2012-13
16	Hirakud-II, OHPC	SS	3x24	125.52	58.73 (as on 31.05.11)	72.00 (LE)	RM&LE	2013-14
Assam								
17	Kopili, NEEPCO	CS	2x50 + 2x50	66.42	7.03 (as on 31.12.11)	-	R&M & Refurbishme nt of Units 1 & 2	2013-14
18	Khandong, NEEPCO	CS	2x25	25.05	10.15 (as on 31.12.11)	50.00 (LE)	RM&LE	2013-14
Meghalaya								
19	Umium St.II , MeSEB	SS	2x9	90.46	53.74 (as on 31.12.11)	2(U)+ 18.00 (LE)	RM&LE	2012-13
	Sub Total(A)		2926.30	1708.64	841.49	1881.70		
Ongoing Schemes – Under Tendering								
Jammu & Kashmir								
20	Ganderbal, J&KPDC	SS	2x3+ 2x4.5	39.30	6.24 (as on 31.12.10)	15.00 (LE)	RM&LE	XIIth Plan
Uttar Pradesh								
21	Matatila, UPJVNL	SS	3x10.2	10.29	1.00 (as on 31.12.11)	30.6 (LE)	RM&LE	XIIth Plan
Uttarakhand								
22	Khatima, UJVNL	SS	3x13.8	140.24	-	41.40 (LE)	RM&LE	XIIth Plan
23	Chilla Ph B UJVNL	SS	4x36	472.00	-	28.8(U) + 144(LE)	RMU&LE	XIIth Plan
24	Dhakrani, UJVNL	SS	3x11.25	113.18	-	33.75 (LE)	RM&LE	XIIth Plan

**Annex-V
(Sheet 3/4)**

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
25	Dhalipur, UJVNL	SS	3x17	113.71	-	51.00 (LE)	RM&LE	XIIth Plan
26	Tiloth, UJVNL	SS	3x30	163.75	-	90 (LE)	RM&LE	XIIth Plan
27	Kulhal, UJVNL	SS	3x10	115.44	-	30(LE)	RM&LE	XIIth Plan
28	Chibro, UJVNL	SS	4x60	201.25	-	240(LE)	RM&LE	XIIth Plan
29	Khodri UJVNL	SS	4x30	165.85	-	120(LE)	RM&LE	XIIth Plan
Tamil Nadu								
30	Sholayar-I, TNEB	SS	2x35	40.68	-	14.00(U) + 70.00 (LE)	RMU&LE	XIIth Plan
Kerala								
Jharkhand								
31	Panchet, U-1, DVC	CS	1x40	58.22	1.99 (as on 31.03.10)	40.00 (LE)	RM&LE	XIIth Plan
Orissa								
32	Hirakud-I U5&6, OHPC	SS	2x37.5	296.83	0.25 (as on 31.05.11)	75.00 (LE)	RM&LE	XIIth Plan
33	Balimela, OHPC	SS	6x60	160	-	360(LE)	RM&LE	XIIth Plan
	Sub Total(B)		1340.75	2090.74	9.48	1383.55		
Ongoing Schemes – Under DPR Preparation/Finalisation								
Himachal Pradesh								
34	Giri, HPSEB	SS	2x30	48.48	-	60.00 (LE)	RM&LE	XIIth Plan
Andhra Pradesh								
35	Machkund , APGENCO	SS	3x17 (St.I) & 3x21.25 (St.II)	124.45	-	15.25 (U) + 114.75 (LE)	RMU&LE	XIIth Plan
Kerala								
36	Sholayar, KSEB	SS	3x18	54.00	0.044 (as on 31.12.10)	54.00 (LE)	RM&LE	XIIth Plan
37	Kuttiadi, KSEB	SS	3x25	25.00	-	75.00 (LE)	RM&LE	XIIth Plan

S. No	Project, Agency	CS/ SS	Inst. Cap. (MW)	Est. Cost	Actual Exp.	Benefits (MW)	Category	Year of Completion
				(Rs. in Crs.)				
Meghalaya								
38	Kyrdemkulai, MeSEB	SS	2x30	376.68	-	60.00 (LE) 6.00 (U)	RMU & LE	XIIth Plan
	Sub Total(C)		363.75	628.61	0.044	385.00		
Ongoing Schemes – Under RLA Studies								
Andhra Pradesh								
39	Upper Sileru, APGENCO	SS	4x60	10.00	-	-	R&M	XIIth Plan
Tamil Nadu								
40	Kodayar Ph.I, TNEB	SS	1x60	30.00	-	60.00 (LE)	RM&LE	XIIth Plan
41	Kodayar PH-II, TNEB	SS	1x40	19.94	-	40.0(LE)	RM&LE	XIIth Plan
	Sub Total(D)		340.00	59.94	-	100.00		
	Total (A+B+C+D)		4970.80	4487.93	851.01	3750.25 [219.05(U) + 3516.20(LE) + 15.0 (Res.)]		

Abbreviations: R&M – Renovation & Modernisation; U – Uprating; LE – Life Extension; Res – Restoration; MW – Mega Watt; CS-Central Sector; SS- State Sector

Abbreviations of Agencies

1.	APGENCO	Andhra Pradesh Generation Corporation
2.	BBMB	Bhakra Beas Management Board
3.	DVC	Damodar Valley Corporation
4.	GSECL	Gujarat State Electricity Corporation Ltd.
5.	HPSEB	Himachal Pradesh State Electricity Board
6.	J&KPDC	Jammu & Kashmir Power Development Corpn.
7.	JSEB	Jharkhand State Electricity Board
8.	KPCL	Karnataka Power Corporation Ltd.
9.	KSEB	Kerala State Electricity Board
10.	MPPGCL	Madhya Pradesh Power Generation Co. Ltd.
11.	MSPGCL	Maharashtra State Power Generation Co. Ltd.
12.	MeECL	Meghalaya Electricity Corporation Ltd.
13.	NHPC	National Hydro Electric Power Corporation
14.	NEEPCO	North-East Electric Power Corporation
15.	OHPC	Orissa Hydro Power Corporation
16.	PSEB	Punjab State Electricity Board
17.	RRVUNL	Rajasthan Rajya Vidyut Utpadan Nigam Ltd.
18.	TSECL	Tripura State Electricity Corporation Ltd.
19.	TNEB	Tamil Nadu Electricity Board
20.	UPJVNL	Uttar Pradesh Jal Vidyut Nigam Ltd.
21.	UJVNL	Uttarakhand Jal Vidyut Nigam Ltd.
22.	WBSEDCL	West Bengal State Electricity & Dist. Co. Ltd.