Annexure I
(Refer to para 6 in Chapter I)

State wise sample selected for audit of Small Hydro Power, Biomass bagasse and Biomass non bagasse

State	Small Hydro Power		Biomass bagasse		Biomass non bagasse	
	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected
Andhra Pradesh	67	7	24	2	10	5
Arunachal Pradesh	187	33	Nil	Nil	Nil	Nil
Assam	Nil	Nil	Nil	Nil	Nil	Nil
Bihar	13	1	Nil	Nil	Nil	Nil
Chhattisgarh	2	1	Nil	Nil	1	1
Gujarat	5	None	Nil	Nil	Nil	Nil
Haryana	4	Nil	4	2	17	9
Himachal Pradesh	88	13	0	0	0	0
Jammu & Kashmir	Nil	Nil	Nil	Nil	Nil	Nil
Jharkhand	Nil	Nil	Nil	Nil	Nil	Nil
Karnataka	87	12	53	5	13	3
Kerala	13	5	Nil	Nil	Nil	Nil
Madhya Pradesh	86	11	Nil	Nil	34	6
Maharashtra	46	5	81	8	18	2
Meghalaya	4	2	Nil	Nil	Nil	Nil
Mizoram	11	1	Nil	Nil	Nil	Nil
Nagaland	1	1	1	1	1	1
Odisha	5	1	Nil	Nil	1	1
Punjab	42	4	1	1	24	13
Rajasthan	10	Nil	14	2	1	1
Tamil Nadu	21	5	95	10	8	4
Uttar Pradesh	Nil	Nil	Nil	Nil	25	10
Uttarakhand	7	4	3	1	6	1
West Bengal	8	2	Nil	Nil	150	15

Source: MNRE.

Annexure I
(Refer to para 6 in Chapter I)

State wise sample selected for audit of wind energy programmes

States	Generation Based Incentive (GBI)		Accelerated Depreciation (AD)	
	Total Projects	Sample Selected	Total Projects	Sample Selected
Andhra Pradesh	NA	NA	42	4
Arunachal Pradesh	Nil	Nil	Nil	Nil
Assam	Nil	Nil	Nil	Nil
Bihar	NA	NA	NA	NA
Chhattisgarh	Nil	Nil	Nil	Nil
Gujarat	Nil	Nil	1,230	62
Haryana	Nil	Nil	Nil	Nil
Himachal Pradesh	Nil	Nil	Nil	Nil
Jammu & Kashmir	Nil	Nil	Nil	Nil
Jharkhand	Nil	Nil	Nil	Nil
Karnataka	145	15	Nil	Nil
Kerala	3	1	Nil	Nil
Madhya Pradesh	Nil	Nil	88	13
Maharashtra*	1,938	100		
Meghalaya	Nil	Nil	Nil	Nil
Mizoram	Nil	Nil	Nil	Nil
Nagaland	Nil	Nil	2	2
Odisha	Nil	Nil	Nil	Nil
Punjab	Nil	Nil	Nil	Nil
Rajasthan	Nil	Nil	71	8
Tamil Nadu*	11,598	170		
Uttar Pradesh	Nil	Nil	Nil	Nil
Uttarakhand	Nil	Nil	Nil	Nil
West Bengal	Nil	Nil	3	2

Source: SNAs.

NA – Not Available.

* In the States of Maharashtra and Tamil Nadu the total projects shown are combined i.e. installed under GBI and AD schemes.

Annexure I : (Refer to para 6 in Chapter I)

State wise sample selected for audit of grid connected Solar Renewable Energy programmes

State	JNNSM		Migration		RPSSGP		Demonstration Programme		Solar Projects under the State Policy	
	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected
Andhra Pradesh	5	2	Nil	Nil	11	1	1	Nil	28	4
Arunachal Pradesh	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Assam	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Bihar	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Chhattisgarh	Nil	Nil	Nil	Nil	2	1	Nil	Nil	2	1
Gujarat	1	Nil	Nil	Nil	Nil	Nil	Nil	Nil	78	20
Haryana	Nil	Nil	Nil	Nil	9	2	Nil	Nil	Nil	Nil
Himachal Pradesh	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Jammu & Kashmir	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Jharkhand	Nil	Nil	Nil	Nil	8	4	Nil	Nil	Nil	Nil
Karnataka	2*	Nil	Nil	Nil	Nil	Nil	Nil	Nil	3	3
Kerala	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Madhya Pradesh	Nil	Nil	Nil	Nil	3	Nil	Nil	Nil	69	27
Maharashtra	3	1	3	1	3	3	1	1	2	1
Meghalaya	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Mizoram	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Nagaland	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Odisha	2*	Nil	Nil	Nil	8	2	Nil	Nil	Nil	Nil
Punjab	Nil	Nil	1	1	7	2	Nil	Nil	1	1
Rajasthan	50*	Nil	12	Nil	12	3	2	2	73	19

State	JNNSM		Migration		RPSSGP		Demonstration Programme		Solar Projects under the State Policy	
	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected	Total Projects	Sample Selected
Tamil Nadu	1	Nil	Nil	Nil	7	2	1	1	Nil	Nil
Uttar Pradesh	1	Nil	Nil	Nil	5	Nil	Nil	Nil	Nil	Nil
Uttarakhand	Nil	Nil	Nil	Nil	3	1	Nil	Nil	Nil	Nil
West Bengal	Nil	Nil	Nil	Nil	Nil	Nil	1	Nil	1	1

Source: MNRE, State Nodal Agencies, NTPC Vidyut Vyapar Nigam Limited and Indian Renewable Energy Development Agency.

* One project each in these States have been cancelled. In addition to the above out of 62 JNNSM projects implemented by NVVN, 46 were selected for audit. Out of a total of 16 projects under Migration scheme implemented by NVVN, nine were selected for audit. Further, out of 67 RPSSGP project implemented by IREDA, 17 were selected for audit and out of a total of six Demonstration projects implemented by IREDA, three were selected for audit.

Annexure II
(Refer to para 2.2 in Chapter II)

Targets for Renewable Purchase Obligation (RPO) set by the State Electricity Regulatory Commissions from 2010-11 to 2019-20

(in *per cent*)

S. No.	State	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
	NAPCC Target	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00
1	**Andhra Pradesh**		5.00	5.00	5.00	5.00	5.00	5.00			
2	**Arunachal Pradesh**			4.20	5.60	7.00					
3	**Assam**		2.80	4.20	5.60	7.00					
4	**Bihar**	1.50	3.00	4.00	4.50	5.00	1.00	1.25	1.50	1.75	2.00
5	**Chhattisgarh**	5.00	5.25	5.75	5.75	5.75					
6	**Gujarat**	5.00	6.00	7.00	7.00	8.00	9.00	10.00			
7	**Haryana**	1.50	1.50	2.05	3.10						
8	**Himachal Pradesh**	10.00	10.01	10.25	10.25	10.25	11.25	12.25	13.50	14.75	16
9	**Jammu & Kashmir**		3.00	5.00	5.00	6.00	7.50	9.00			
10	**Jharkhand**	2.00	3.00	4.00	4.00	4.00	4.00				
11	**Karnataka**		7.25	7.25	7.25						
12	**Kerala**	3.30	3.60	3.90	4.20	4.50	4.80	5.10	5.40	5.70	6.00
13	**Madhya Pradesh**		2.50	4.00	5.50	7.00					
14	**Maharashtra**	6.00	7.00	8.00	9.00	9.00	9.00				
15	**Meghalaya**	0.50	0.75	1.00	1.00						
16	**Mizoram**	5.00	6.00	7.00							
17	**Nagaland**	5.00	7.00	8.00							
18	**Odisha**		5.00	5.50	6.00	6.50	7.00				
19	**Punjab**		2.40	2.90	3.50	4.00					
20	**Rajasthan**	8.50	6.00	7.10	8.20						
21	**Tamil Nadu**		9.00	9.00	9.00	11.00	11.00				
22	**Uttar Pradesh**	3.75	5.00	6.00	6.00						
23	**Uttarakhand**		4.53	5.05	6.05	7.08	8.10	9.30	11.50		
24	**West Bengal**				4.00	5.00	6.00	7.00	8.00		

Source: Ministry of New and Renewable Energy.

Note: NAPCC – National Action Plan for Climate Change.

Annexure III
(Refer to para 2.3 in Chapter II)

Status of Renewable Purchase Obligation (RPO) compliance between 2010-11 and 2013-14

S.No.	RPO notified/ achievement (in *per cent*)				
	State	**2010-11**	**2011-12**	**2012-13**	**2013-14**
	NAPCC	6.00	7.00	8.00	9.00
1	**Andhra Pradesh**		5.00/ NA	5.00/ 1.75	5.00/ NA
2	**Arunachal Pradesh**			4.20/ 8.41	5.60/ 8.87
3	**Assam**	0/ 8.40	2.80/ 4.02	4.20/ 3.44	5.60/ NA
4	**Bihar**	1.50/ 1.00	2.50/ 2.10	4.00/ 2.90	4.50/ 1.89
5	**Chhattisgarh**	5.00/ 0	5.25/ 2.76	5.75/ 2.96	6.25/ NA
6	**Gujarat**	5.00/ 2.76	6.00/ 4.73	7.00/ 6.50	7.00/ 6.72
7	**Haryana**	1.50/ 1.06	1.50/ 1.07	2.05/ 0.97	3.10/ 0.94
8	**Himachal Pradesh**	10.00/ 12.00	10.01/ 15.73	10.25/ 17.26	10.25/ 16.69
9	**Jammu & Kashmir**		3.00/ Nil	5.00/ Nil	5.00/ Nil
10	**Jharkhand**	2.00/ 0.19	3.00/ 0.28	4.00/ 0.39	4.00/ 0.42
11	**Karnataka**	0/ 10.70	7.25/ 10.73	7.25/ 9.93	7.25/ 10.97
12	**Kerala**	3.00/ 3.38	3.30/ 2.85	3.60/ 2.47	3.90/ NA
13	**Madhya Pradesh**		2.50/ NA	4.00/ NA	5.50/ NA
14	**Maharashtra**	6.00/ 5.77	7.00/ 7.15	8.00/ 7.05	9.00/ 7.66
15	**Meghalaya**	0.50/ 4.14	0.75/ 3.41	1.00/ 5.00	1.00/ 3.80
16	**Mizoram**	5.00/ 5.14	6.00/ 7.76	7.00/ 14.45	9.00/ 11.99
17	**Nagaland**	5.00/ Nil	5.00/ Nil	5.00/ Nil	5.00/ Nil
18	**Odisha**		5.00/ NA	5.50/ NA	6.00/ NA
19	**Punjab**		2.40/ 1.69	2.90/ 2.59	3.50/ 3.08
20	**Rajasthan**	8.50/ 3.55	6.00/ 5.16	7.10/ 6.30	8.20/ 7.25
21	**Tamil Nadu**	0/ 17.27	9.00/ 20.09	9.00/ 26.13	9.00/ 20.04
22	**Uttar Pradesh**	3.75/ 4.56	5.00/ 6.19	6.00/ 4.68	6.00/ 4.45
23	**Uttarakhand**		4.53/NA	5.05/ 3.78	6.05/ 3.15
24	**West Bengal**		2.00/ NA	3.00/ 1.47	4.00/2.54

Source: Data provided by respective State Nodal Agencies.

Note: NA – Not Available.

Annexure IV
(Refer to para 2.4 in Chapter II)

State wise Renewable Purchase Obligation (RPO) achievement

State	Total Electricity purchased during 2010-14 (in BU)	RPO Targets for 2010-14 (in MU)	RPO achieved through Renewable Energy purchase		RPO achieved through Renewable Energy Certificate mode (in MU)		Total RPO Achievement (in MU)	Shortfall (in MU)
			(in MU)	Percentage	(in MU)	Percentage		
Andhra Pradesh	76	3,800	1,330	100	Nil	Nil	1,330	2,470
Arunachal Pradesh	2.36	58.31	102.78	100	Nil	Nil	102.78	Nil
Assam	12.64	434.79	17.09	100	Nil	Nil	17.09	417.70
Bihar	24.21	793.32	488.72	100	Nil	Nil	488.72	304.60
Chhattisgarh	41.09	2,266.82	1,090	92.37	90	7.63	1,180	1,086.82
Gujarat	287.04	18,990	8,620	56.89	6,530	43.11	15,150	3,840
Haryana	144.56	2,981	1,452	100	Nil	Nil	1,452	1,529
Himachal Pradesh	30.02	5,000	4,620	100	Nil	Nil	4,620	380
Jammu & Kashmir	NA	NA	NA	NA	NA	NA	NA	NA
Jharkhand	39.96	1,319.36	39.36	100	Nil	Nil	39.36	1,280
Karnataka	214.70	15,020	22,712	100	Nil	Nil	22,712	Nil
Kerala	45.95	1,490	1,320	100	Nil	Nil	1,320	170
Madhya Pradesh	181.94	6,350	2,480	100	Nil	Nil	2,480	3,870
Maharashtra	373.84	28,252.59	25,675.09	98.86	296.49	1.14	25,971.58	2,281.01
Meghalaya	6.96	57.20	290	100	Nil	Nil	290	Nil
Mizoram	1.62	110.81	161.27	100	Nil	Nil	161.27	Nil
Nagaland	1.98	99.09	99.09	100	Nil	Nil	99.09	Nil
Odisha	NA	2,469	1,706	100	Nil	Nil	1,706	763
Punjab	131.68	3,888	2,900	89	368	11	3,268	620
Rajasthan	210.03	15,621	11,949	100	Nil	Nil	11,949	3,672
Tamil Nadu	203.15	13,740	42,359	100	Nil	Nil	42,359	Nil
Uttar Pradesh	291.05	17,738.84	15,053.26	100	Nil	Nil	15,053.26	2,685.58
Uttarakhand	32.87	1,714.52	1,219.29	90.76	124.12	9.24	1,343.41	371.11
West Bengal	154.69	5,030.06	2,536.19	99.99	2.81	0.10	2,539	2,491.06
Total			148220.14	95.23	7411.42	4.77	155631.56	28231.88

Note: NA – Not Available.

Annexure V
(Refer to para 2.5 in Chapter II)

Non levy of penalty on obligated entities for not complying with Renewable Purchase Obligation

State	Shortfall (in MU)	Estimated penalty* (in ₹ crore)	Remarks
Andhra Pradesh	2,470.00	370.50	Penalty for non solar at the rate of ₹ 1,500 per REC. For period 2012-13
Arunachal Pradesh	Nil	Nil	No shortfall
Assam	417.70	62.66	For period 2011-13
Bihar	304.60	45.69	Bihar Energy Regulatory Commission ordered creation of a separate fund of ₹ 21.08 crore for shortfall, however the same has not been done yet for period 2010-14
Chhattisgarh	1,086.82	163.02	For period 2011-13
Gujarat	3,840.00	576.00	For period 2010-14. The matter of RPO fulfillment is kept for judgment (petition no. 1437 and 1442 of 2014) by Gujarat Energy Regulatory Commission.
Haryana	1,529.00	229.35	For period 2010-14.
Himachal Pradesh	380.00	57.00	For period 2010-14.
Jammu & Kashmir	NA	NA	
Jharkhand	1,280.00	192.00	For period 2010-14.
Karnataka	Nil	Nil	For period 2007-14. Being an RE rich state, RPO targets were met. However Karnataka Energy Regulatory Commission has not prescribed any penalty for non compliance
Kerala	170.00	25.50	For period 2010-14.
Madhya Pradesh	3,870.00	580.50	For period 2007-14.
Maharashtra	2,281.01	342.15	Time extension upto 2013-14 for Non-Solar Projects and upto 2015-16 for Solar Projects were been granted by Maharashtra Energy Regulatory Commission for recoupment of the shortfall.
Meghalaya	Nil	Nil	For 2010-14. No shortfall.
Mizoram	Nil	Nil	For 2010-14. No shortfall.
Nagaland	Nil	Nil	No shortfall.
Odisha	763.00	114.45	For period 2012-14.
Punjab	620.00	93.00	For period 2011-14.
Rajasthan	3,672.00	550.80	For period 2007-14. Rajasthan Energy Regulatory Commission had not prescribed the scale of penalty for shortfall.
Tamil Nadu	Nil	Nil	No shortfall
Uttar Pradesh	2,685.58	402.84	No clause for imposition of penalty for non-compliance
Uttarakhand	371.11	55.67	Uttarakhand Energy Regulatory Commission had levied a token penalty of ₹ 20,000 on Uttarakhand Power Corporation Limited. Recently it had allowed carrying over of unmet RPO to FY 2014-15
West Bengal	2,491.06	373.66	For 2010-14.
Total	**28,231.88**	**4,234.79**	

* Calculated at a floor price of ₹ 1,500 per Renewable Energy Certificate (REC).
Note: NA – Not Available.

Annexure VI
(Refer to para 3.1 in Chapter II)

State wise list of projects registered under Solar and non Solar Renewable Energy Certificate (REC) as on July 2014

State	Projects registered under Solar REC		Projects registered under non Solar REC		Total projects registered under REC	
	Number	Capacity (in MW)	Number	Capacity (in MW)	Number	Capacity (in MW)
Andhra Pradesh	7	37.79	14	124.80	21	162.59
Bihar	0	0	5	26.60	5	26.60
Chhattisgarh	2	3.10	8	86.50	10	89.60
Gujarat	0	0	47	336.30	47	336.30
Haryana	0	0	6	18.56	6	18.56
Himachal Pradesh	0	0	7	55.51	7	55.51
Jammu & Kashmir	0	0	1	15	1	15
Karnataka	0	0	15	137.25	15	137.25
Kerala	0	0	2	23.20	2	23.20
Madhya Pradesh	53	83.77	9	63.17	62	146.94
Maharashtra	29	45.75	324	845.84	353	891.59
Nagaland	0	0	1	24	1	24
Odisha	1	2.50	2	30.40	3	32.90
Punjab	0	0	6	53.28	6	53.28
Rajasthan	59	159.12	20	141	79	300.12
Tamil Nadu	13	36.86	214	1,018.85	227	1,055.71
Uttar Pradesh	0	0	53	678.13	53	678.13
Uttarakhand	0	0	3	44	3	44
Total	**164**	**368.89**	**737**	**3,722.39**	**901**	**4,091.28**

Source: Renewable Energy Certificate Registry of India.

Annexure VII
(Refer to para 2 in Chapter III)

Estimated potential, target fixed and installed capacity of Solar power as on 31 March 2014

S. No.	State	Estimated potential[1] (in MW)	Targets fixed (2007-14)	Installed capacity as per MNRE (in MW)	Installed capacity as per States/ UTs (in MW)	Installation (in percentage) over estimated potential
		(i)	(ii)	(iii)	(iv)	(iii) x 100/(i)
1	Andhra Pradesh	58,850	Nil	131.84	95.98	0.22
2	Arunachal Pradesh	8,650	Nil	0.03	Nil	Nil
3	Assam	13,760	Nil	Nil	Nil	Nil
4	Bihar	11,200	Nil	Nil	Nil	Nil
5	Chhattisgarh	18,270	Nil	7.10	9.60	0.04
6	Delhi	2,050	-	5.15	-	0.25
7	Goa	880	-	Nil	-	Nil
8	Gujarat	35,770	Nil	916.40	891.16	2.56
9	Haryana	4,560	Nil	10.30	12.80	0.23
10	Himachal Pradesh	33,840	Nil	Nil	Nil	Nil
11	Jammu & Kashmir	1,11,050	Nil	Nil	Nil	Nil
12	Jharkhand	18,180	Nil	16.00	16.00	0.09
13	Karnataka	24,700	256.00	31.00	31.00	0.13
14	Kerala	6,110	Nil	0.03	Nil	Nil
15	Madhya Pradesh	61,660	748.38	347.17	272.77	0.56
16	Maharashtra	64,320	225.00	249.25	230.25	0.39
17	Manipur	10,630	-	Nil	-	Nil
18	Meghalaya	5,860	Nil	Nil	Nil	Nil
19	Mizoram	9,090	Nil	Nil	Nil	Nil
20	Nagaland	7,290	Nil	Nil	Nil	Nil
21	Odisha	25,780	Nil	30.50	13.00	0.12
22	Punjab	2,810	1,000	16.85	10.50	0.60
23	Rajasthan	1,42,310	1,380	730.10	725.50	0.51
24	Sikkim	4,940	-	Nil	-	Nil
25	Tamil Nadu	17,670	700	98.36	97.00	0.56
26	Tripura	2,080	-	Nil	-	Nil
27	Uttar Pradesh	22,830	Nil	21.08	Nil	0.09
28	Uttarakhand	16,800	Nil	5.05	5.00	0.03
29	West Bengal	6,260	100	7.05	2.00	0.11
30	Union Territories[2]	790	-	7.88		1.00
	Total	**7,48,990**	**4,409.38**	**2,631.14[3]**	**2,412.56**	**0.35**

Source: State Nodal Agencies (SNAs) and MNRE.

[1] As per National Institute of Wind Energy.
[2] Andaman & Nicobar Islands, Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Lakshadweep and Puducherry.
[3] However, the year wise installed capacity as per MNRE was 2,656 MW.

Annexure VIII
(Refer to para 4.1.2 in Chapter III)

Year-wise project wise service charges deducted by Indian Renewable Energy Development Agency (IREDA)

(in ₹)

Year/ Name of project proponent	M/s Reliance Industries			M/s Sapphire Industrial Infrastructures Private limited			M/s Par Solar Pvt ltd.		
	Service charges charged by IREDA	Maximum limit	Excess charged by IREDA	Service charges charged by IREDA	Maximum limit	Excess charged by IREDA	Service charges charged by IREDA	Maximum allowable	Excess charged by IREDA
2011-12	15,67,647	5,00,000	10,67,647	10,79,545	5,00,000	5,79,545	0	0	0
2012-13	6,81,052	5,00,000	1,81,052	36,751	5,00,000	0	0	0	0
2013-14	0	0	0	10,54,562	5,00,000	5,54,562	8,56,391	5,00,000	3,56,391
Total	22,48,699	10,00,000	12,48,699	21,70,858		11,34,107	8,56,391		3,56,391
Adjusted in 2014-15			0	(6,21,619)			(2,89,501)		

The total excess charged by IREDA during 2011-14 works out to ₹ (12,48,699+11,34,107+3,56,391) = ₹ 27.39 lakh.

Annexure IX
(Refer to para 4.4.6 in Chapter III)

Details of delay in supply of bundled power in Jawaharlal Nehru National Solar Mission (JNNSM)

Name of Scheme	Number of projects	Date of commissioning of the projects	Allocation of NTPC thermal power made effective from	Number of days for which NVVN supplied only solar power (without bundling with thermal power)
Migration	7	10-15 October 2011 and 20 November 2011	26 October 2011 and 14 December 2011	11 to 24 days
Batch-I of JNNSM	8	1 January 2012 to 10 January 2012	21 January 2012	11 to 20 days
Batch-I of JNNSM	5	2 February 2012 to 22 March 2012	11 July 2012	111 to 160 days
Batch-II of JNNSM	8	23 December 2012 to 13 February 2013	1 March 2013	16 to 68 days
Batch II of JNNSM	17	11 February 2013 to 26 March 2013	6 April 2013	11 to 54 days

Annexure X
(Refer to para 2.3 in Chapter V)

State wise estimated potential and installed capacities of Small Hydro Power

S. No.	States	Estimated Potential		Installed Capacity		Sites used (in percentage)	Installed Capacity (in percentage)
		No. of sites	Capacity (in MW)	No. of sites	Capacity (in MW)		
1	Andaman &Nicobar Islands	7	7.91	1	5.25	14	66
2	Andhra Pradesh	387	978.40	68	221.03	18	23
3	Arunachal Pradesh	677	1,341.38	149	103.905	22	8
4	Assam	119	238.69	6	34.11	5	14
5	Bihar	93	223.05	29	70.70	31	32
6	Chhattisgarh	200	1,107.15	9	52	5	5
7	Goa	6	6.50	1	0.05	17	1
8	Gujarat	292	201.97	5	15.60	2	8
9	Haryana	33	110.05	7	70.10	21	64
10	Himachal Pradesh	531	2,397.91	158	638.905	30	27
11	Jammu &Kashmir	245	1,430.67	37	147.53	15	10
12	Jharkhand	103	208.95	6	4.05	6	2
13	Karnataka	834	4,141.12	147	1,031.658	18	25
14	Kerala	245	704.10	25	158.42	10	22
15	Madhya Pradesh	299	820.44	11	86.16	4	11
16	Maharashtra	274	794.33	58	327.425	21	41
17	Manipur	114	109.13	8	5.45	7	5
18	Meghalaya	97	230.05	4	31.03	4	13
19	Mizoram	72	168.90	18	36.47	25	22
20	Nagaland	99	196.98	11	29.67	11	15
21	Odisha	222	295.47	10	64.625	5	22
22	Punjab	259	441.38	47	156.20	18	35
23	Rajasthan	66	57.17	10	23.85	15	42
24	Sikkim	88	266.64	17	52.11	19	20
25	Tamil Nadu	197	659.51	21	123.05	11	19
26	Tripura	13	46.86	3	16.01	23	34
27	Uttar Pradesh	251	460.75	9	25.10	4	5
28	Uttarakhand	448	1,707.87	99	174.82	22	10
29	West Bengal	203	396.11	23	98.40	11	25
	Total	**6,474**	**19,749.44**	**997**	**3,803.678**	**15**	**19**

Source: MNRE.

Note: No Small Hydro Power potential was reported for Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Delhi, Lakshadweep and Puducherry.

Annexure XI
(Refer to para 2.2 in Chapter VII)

Physical targets and achievements of off - grid Renewable Energy systems (2007-14)

S. No.	State	Target and Achievement	Solar Lanterns (Nos.)	Solar Home Lights (Nos.)	Solar Street Lights (Nos.)	Solar Water Pumps (Nos.)	Solar Power Plants (kW/Nos.)	Solar Water Heating (sqm/LPD/Nos.)
1	Andhra Pradesh	Target	30,625	150	3,156	NA	NA	88,934
		Achievement	29,117	21	2,845	5	1,581.83 kW	22,633
2	Arunachal Pradesh	Target	4,000	5,579	300	NA	2	NA
		Achievement	4,000	5,579	300	Nil	2	Nil
3	Assam	Target	500	1,041	638	NA	638 kW	6,597 (sqm)
		Achievement	Nil	291	588	Nil	220 kW	648 (sqm)
4	Bihar	Target	17,700	8,600	1,189	1,560	100 kW	15,000 LPD
		Achievement	17,700	8,600	1,089	1,300	100 kW	9,400 LPD
5	Chhattisgarh	Target	NA	NA	NA	NA	NA	NA
		Achievement	8,412	3,821	3,074	1, 834	4,640 kW	2,793
6	Gujarat	Target	NA	3,058	NA	NA	57	19,675
		Achievement	Nil	Nil	Nil	Nil	40	12,936
7	Haryana	Target	43,591	17,879	32,787	74	169	30,00,000 LPD
		Achievement	43,591	13,185	31,497	74	36	26,15,000 LPD
8	Himachal Pradesh	Target	16,052	2,040	35,062	NA	2,825 kW	33,773 (sqm)
		Achievement	12,292	2,040	35,062	Nil	2,825 kW	15,889 (sqm)
9	Jammu & Kashmir	Target	15,150	32,500	300	NA	4,473.30 kW	21,660 (sqm)
		Achievement	14,347	21,550	210	Nil	2,154.30 kW	2,464 (sqm)
10	Jharkhand	Target	7,000	NA	7,000	77	5,060 kW	250
		Achievement	7,000	Nil	3,467	Nil	230 kW	81
11	Karnataka	Target	NA	NA	NA	NA	NA	NA
		Achievement	Nil	Nil	Nil	Nil	Nil	98
12	Kerala	Target	NA	4,704	1,400	NA	11,780.65 kW	7,955 (sqm)
		Achievement	Nil	4,704	579	Nil	6,703.36 kW	3,428 (sqm)
13	Madhya Pradesh	Target	NA	4,700	12,979	4	1,586	843
		Achievement	Nil	3,805	12,875	4	576	843

S. No.	State	Target and Achievement	Solar Lanterns (Nos.)	Solar Home Lights (Nos.)	Solar Street Lights (Nos.)	Solar Water Pumps (Nos.)	Solar Power Plants (kW/Nos.)	Solar Water Heating (sqm/LPD/Nos.)
14	Maharashtra	Target	60,000	274	1,173	NA	NA	123 (sqm)
		Achievement	60,000	274	1,173	Nil	Nil	123 (sqm)
15	Meghalaya	Target	3,26,356	1,26,156	1,56,132	NA	422	186
		Achievement	330	1,28,130	1,34,128	Nil	424	186
16	Mizoram	Target	NA	NA	1,000	NA	41	NA
		Achievement	2,181	4,004	Nil	Nil	41	922
17	Nagaland	Target	NA	NA	4,200	NA	57	NA
		Achievement	5,503	2,791	3,816	Nil	55	1,232
18	Odisha	Target	NA	1,000	180	NA	NA	4,000 (sqm)
		Achievement	Nil	476	214	Nil	70	722 (sqm)
19	Punjab	Target	NA	NA	NA	600	NA	17,00,000 LPD
		Achievement	2,438	4,500	3,866	100	1,120 kW	8,42,000 LPD
20	Rajasthan	Target	NA	71,391	NA	15,550	7	5,100
		Achievement	Nil	67,587	90	14,414	7	2,015
21	Tamil Nadu	Target	NA	1,80,000	60,000	500	6,000 kW	50,000 (sqm)
		Achievement	Nil	78,343	21,130	134	2,055 kW	28,932 (sqm)
22	Uttar Pradesh	Target	NA	13,164	1,24,344	900	981	23,64,000 LPD
		Achievement	Nil	11,874	1,02,975	567	691	14,80,500 LPD
23	Uttarakhand	Target	1,13,259	9,985	18,543	NA	19	7
		Achievement	1,13,259	9,985	18,143	Nil	19	7
24	West Bengal	Target	15,000	34,783	8,325	Nil	101 kW	500
		Achievement	13,035	28,771	6,325	1	71 kW	137

Note – NA – Not Available, Nos – Numbers, LPD – Litre per day, sqm – square metre, Solar Home Lighting System (SHLS), Solar Street Lighting System (SSLS), Solar Power Plant (SPP), Solar Lantern (SL) and Solar Water Pump (SWP), LPD – Litres per day, sqm – square metres, kW – kilo Watt.

Annexure XII
(Refer to para 3 in Chapter VII)
Details of Central Financial Assistance (CFA) released to States and unspent balances

(in ₹ crore)

S. No.	State	Opening Balance	Budget			Total Budget	Expenditure	Unspent balance	Refund
			CFA	State share	Others				
1	Andhra Pradesh	Nil	15.36	Nil	Nil	15.36	8.36	7	Nil
2	Arunachal Pradesh	Nil	26.48	1.05	Nil	27.53	27.93	(-) 0.40	Nil
3	Assam	Nil	7.80	0.74	Nil	8.54	4.88	3.66	Nil
4	Bihar	Nil	5.96	68.13	22.01	96.11	34.77	61.34	Nil
5	Chhattisgarh	Nil	137.29	87.34	Nil	224.63	419.93	(-)195.30	Nil
6	Gujarat	Nil	17.07	0.87	Nil	17.94	12.21	5.73	0.45
7	Haryana	Nil	31.49	33.91	Nil	65.40	62.66	2.74	Nil
8	Himachal Pradesh	Nil	52.03	1.20	7.21	60.44	89.56	(-)29.12	Nil
9	Jammu & Kashmir	Nil	38.05	26.17	Nil	64.22	61.25	2.97	Nil
10	Jharkhand	Nil	15.44	81.45	14.47	111.36	76.88	34.48	Nil
11	Karnataka	Nil	3.45	Nil	Nil	3.45	Nil	3.45	Nil
12	Kerala	Nil	7.67	16.55	0.51	24.73	46.50	(-)21.77	Nil
13	Madhya Pradesh	Nil	27.29	13.42	Nil	40.71	44.44	(-)3.73	Nil
14	Maharashtra	Nil	40.98	Nil	Nil	40.98	40.98	Nil	Nil
15	Meghalaya	Nil	22.46	1.96	Nil	24.42	28.53	(-)4.11	Nil
16	Mizoram	Nil	6.57	4.95	2.15	13.67	13.67	Nil	Nil
17	Nagaland	Nil	16.06	11.62	Nil	27.68	24.33	3.35	Nil
18	Odisha	Nil	1.76	10.75	Nil	12.51	6.62	5.89	Nil
19	Punjab	Nil	20.66	1.42	Nil	22.08	21.88	0.20	Nil
20	Rajasthan	Nil	117.11	12.66	Nil	129.77	112.43	17.34	Nil
21	Tamil Nadu	Nil	56.93	157.60	Nil	214.53	214.53	Nil	Nil
22	Uttar Pradesh	Nil	72.75	114.11	Nil	186.86	185.45	1.41	Nil
23	Uttarakhand	10.87	87.52	28.24	51.90	167.66	164.93	2.73	Nil
24	West Bengal	Nil	35.94	32.45	16.11	84.50	78.87	5.63	Nil
	Total	**10.87**	**864.12**	**706.59**	**114.36**	**1,685.07**	**1,781.58**	**(-) 96.51**	**0.45**

Annexure XIII
(Refer to para 4.4 in Chapter VII)

Details of State wise physical verification of off-grid Solar systems by Audit

Type of System	Location and year of installation	Number of systems inspected	Audit observation
Andhra Pradesh			
SHLS and SSLS	Suddakunta village 2008-09	284 SHLS and 34 SSLS	Out of five households electrified, none was occupied, and one house holder was staying at Venkatadripalem village.
SHLS and SSLS	Billagondi hamlet	37 SHLS and 4 SSLS	37 SHLS and 2 SSLS were not working.
Assam			
SHLS	2009 to 2013	48	30 were not working. The beneficiaries in many cases were not aware of the person to be contacted and in 5 cases where AEDA had been informed, action was yet to be taken.
Arunachal Pradesh			
SSLS	East Siang 2007 and 2009	15	Two were not working and 13 were missing.
SSLS	2010 and 2011	25	Six were not working and six were missing. FIR lodged with police for the missing systems. No maintenance was carried out either by suppliers or by APEDA.
SHLS	11 villages 2005, 2006,2007, 2010 and 2012	163	87 were not working and 23 missing.
SHLS	Papumpare, East Siang and Tawang. 2012 and 2010	63 in Kimin village, 67 in Shyaro village and 79 in Debing village.	Though villages were electrified under RGGVY, SHLSs were still issued.
SL	Four villages 1999 and 2007	26	23 were not working.
Bihar			
SSLS	Ten districts.	519	353 were not working and 29 were not received.
SHLS	Ten districts.	65	21 were not working and eight were not received. Recipient's signatures were not on record in respect of 30 SHLS in Vaishali district during the year 2010-11.
SSLS	Six districts[1]	9	Four were not working.
Chhattisgarh			
SWP	2004-05 to 2012-13	69	32 were not working due to theft of modules and other reasons.

[1] East Champaran, Gaya, Nalanda (Bihar Sharif), Patna, Vaishali (Hazipur), West Champaran (Bettiah).

Type of System	Location and year of installation	Number of systems inspected	Audit observation
Gujarat			
SHLS	Dhirkhadi (Taluka-Nandod) 2003-04	92	26 were not working.
SHLS	Ajamapat Nes (Taluka-Ranavav) 2006-07	42	22 were not working.
Haryana			
SSLS	Villages in five selected districts(Kurukshetra, Hisar, Panipat, Jhajjar and Bhiwani) During 9th,10thand 11th Five Year Plans	256	201 were not working
SHLS	-do-	59	24 were not working
SL	-do-	44	37 were not working
SWP	Hisar district	1	Water discharge capacity was very low
Himachal Pradesh			
SHLS, SL and SSLS	Batal	18	All the 18 SSLSs were found to be not working.
SHLS, SL and SSLS	Chail	30	All the 30 SSLSs were found to be not working.
SHLS, SL and SSLS	Dumehar	15	All the 15 SSLSs were found to be not working.
SL	Chamba 1997-98 to 2010-11	109	All the 109 SSLSs were found to be not working.
Jharkhand			
SPP	Deoghar district August 2011	4	As per guidelines, generation should have been 90 *per cent* of its capacity. But it was only between 13 to 24 *per cent* of capacity in the plants.
Jammu & Kashmir			
SSLS	Four hospitals in Jammu November 2011	40	All the 40 were not working. Batteries and other accessories of all the 40 systems were missing and no action was taken.
SSLS	Budgam district November 2011	20	One was not working.
Maharashtra			
SHLS	Miraj, ZP Sangli 2006-07	20	Five were not in the premises where they were to be installed. For other 15, subsidy was not given to beneficiary and training for use and care of SHLSs and AMC was not provided, which was mandatory. Supplier recovered excess amount

Type of System	Location and year of installation	Number of systems inspected	Audit observation
			ranging from ₹ 4,269 to ₹ 13,619 from the beneficiaries.
SL	Vidarbha[2] 2008-09	47	42 were not working.
Odisha			
SHLS, SL and SSLS		73 SSLS, 51 SHLS and 88 SL	33 SSLS, 28 SHLS and 44 SL were not working.
SL	Khurda district[3] 2000-01	45	45 were not working.
Mizoram			
SHLS and SL		35	28 were not working.
SPP	2003	4	One was not working and other three were working at 50 *per cent* efficiency due to damage of batteries.
Nagaland			
SPP	Kohima	10	Four were not working and one was yet to be commissioned.
SWHS	Kohima and Pfiitsero Town	7	Three were not working.
Punjab			
SL	Four sites in four[4] districts.	24	17 were not working. Four were stated to have been gifted to friends/ relatives.
SHLS	Five sites in four districts.	27	22 were not working. Two were stated to have been gifted to relatives and one was missing.
SL	Nine sites in four districts.	476	163 were not working. Two were missing. In Gurdaspur, 46 non-working lights were connected to regular electric supply.
SWP	Four sites in five[5] districts.	15	15 were not working Solar Panels were used for charging regular electric invertors.
SPP	Six sites in three[6] districts.	6	Four were not working. Plant installed at important place like Wagha border was not working. Three plants at Primary school, Lehal and Kalanaur and at Bus stand, Kalanaur were rectified at the instance of Audit.
Rajasthan			
SSLS	Village Silora, District Ajmer 2009	90	All 90 were not working.

[2] Khamgaon, Lonar, and Buldhana in ZP Buldhana, Dhamangaon in ZP Amaravati and Ner, Yavatmal and Babulgaon in ZP Yavatmal

[3] Damanibara and Niladriprasad Gram Panchayat of Banpur Block.

[4] Gurdaspur, Tarn Taran, Patiala and Ludhiana.

[5] Gurdaspur, Ludhiana, Patiala, Tarn Taran and Amritsar.

[6] Gurdaspur, Patiala and Amritsar.

Type of System	Location and year of installation	Number of systems inspected	Audit observation
SWP		6	Two water pumps were being utilised in commercial activities (roadside hotel and manufacturing of cement structures) as against agricultural use mentioned in the scheme.
SHLS	Seven villages	20	Eight were not working.
Uttarakhand			
SSLS	NIVH[7], Dehradun 2006	68	46 were not working.
SSLS	RAPV[8] Hostel. 2006	2	One was not working.
SHLS	Maldevta, Dehradun	--	Not found at the locations mentioned in the list of beneficiaries.
SHLS	Tehri	--	Physical verification could not be done as UREDA officials did not co-operate
SL	2002-03 to 2014	554	100 were not working
SHLS	Gurjarbasti, Bahadrabad, Haridwar May 2007	39	All 39 were not working. Systems became obsolete because of lack of monitoring by UREDA.
SSLS	Jaiti Bazar, Almora district September 2008	15	All 15 were not working properly.
Total		**3,959**	**1,868 systems were not working properly and 50 systems were missing.**

Note: Solar Home Lighting System (SHLS), Solar Street Lighting System (SSLS), Solar Power Plant (SPP), Solar Lantern (SL) and Solar Water Pump (SWP).

[7] National Institute for Visually Handicap.
[8] Rajikya Ashram Padhati Vidhyalaya.

Annexure XIV
(Refer to para 2.2 in Chapter VIII)

State wise target, achievement and installed capacity of Biogas

S.No.	State/ Union Territories	Estimated potential (in lakh)	Estimate shown by State	Target fixed by State 2007-14	Achievement as per State 2007-14	Shortfall (in percentage) w.r.t target of 2007-14	Cumulative achievements as per MNRE (31.03.2014)	Achievement (in percentage) over potential
1.	Andhra Pradesh	10,65,000	10,65,000	1,21,300	94,237	22.31	5,21,764	48.99
2.	Arunachal Pradesh	7,500	NA	700	690	1.43	3,472	46.29
3.	Assam	3,07,000	Not assessed	42,000	40,013	4.73	1,08,302	35.28
4.	Bihar	7,33,000	Not assessed	1,305	805	38	1,29,825	17.71
5.	Chhattisgarh	4,00,000	NA	28,100	24,332	13.40	48,509	12.13
6.	Goa	8,000	Not selected				4,086	51.08
7.	Gujarat	5,54,000	Nil	55,500	35,832	35.44	4,28,676	77.38
8.	Haryana	3,00,000	1500-2000 per year	11,500	9,259	19.48	59,868	19.96
9.	Himachal Pradesh	1,25,000	Not assessed	1,951	1,863	4.51	47,255	37.80
10.	Jammu & Kashmir	1,28,000	KVIC[1]: Not assessed	575	437	12.84	3,033	2.37
			JAKEDA[2]: Not assessed	500	500			
11.	Jharkhand	1,00,000	Not assessed	5,000	1,683	66	7,237	7.24
12.	Karnataka	6,80,000	Nil	87,029	72,033	17.23	4,69,671	69.07
13.	Kerala	1,50,000	Not assessed	22,519	18,504	17.83	1,41,378	94.25
14.	Madhya Pradesh	14,91,000	Not fixed	82,000	68,990	15.86	3,45,808	23.19
15.	Maharashtra	8,97,000	Nil	1,05,100	1,04,523	0.55	8,56,436	95.48
16.	Manipur	38,000	Not selected				2,128	5.60
17.	Meghalaya	24,000	Not estimated	3,000	3,000	Nil	10,046	41.86
18.	Mizoram	5,000	--	2,400	1,165	51.46	4,770	95.40
19.	Nagaland	6,700	Not Assessed	3,750	3,371	10.11	7,653	114.22
20	Odisha	6,05,000	6,05,000	42,500	33,244	22	2,61,830	43.28

[1] Targets & Achievements for the year 2013-14 were not available with the Khadi and Village Industry Commission.

[2] Records for the period 2007-14 were not available due to winding up of Integrated Rural Energy Programme (IREP) in April 2011. MNRE had not sanctioned any biogas plant under the programme except the target of 500 plants during 2010-11.

S.No.	State/ Union Territories	Estimated potential (in lakh)	Estimate shown by State	Target fixed by State 2007-14	Achievement as per State 2007-14	Shortfall (in percentage) w.r.t target of 2007-14	Cumulative achievements as per MNRE (31.03.2014)	Achievement (in percentage) over potential
21	**Punjab**	4,11,000	Not assessed	75,700	67,323	11.08	1,64,295	39.97
22.	**Rajasthan**	9,15,000	Nil	2,183	2,089	4.31	69,393	7.58
23.	**Sikkim**	7,300	Not selected				8,744	119.78
24.	**Tamil Nadu**	6,15,000	NA	13,812	10,068	27	2,21,704	36.05
25.	**Tripura**	28,000	Not selected				3,328	11.89
26.	**Uttar Pradesh**	19,38,000	Nil	26,900	16,204	40	4,37,360	22.57
27.	**West Bengal**	6,95,000	Not assessed	74,000	32,805	44.33	3,66,333	52.71
28.	**A&N Islands**	2,200	Not selected				137	6.22
29.	**Chandigarh**	1,400	Not selected				97	6.93
30.	**Dadra & Nagar Haveli**	2,000	Not selected				169	8.45
31.	**Delhi**	12,900	Not selected				681	5.28
32.	**Puducherry**	4,300	Not selected				578	13.44
33.	**Uttarakhand**	83,000		3,700	3,206		17,534	21.13
	Total	**1,23,39,300**		**8,13,024**	**6,46,176**	**20.52**	**47,52,100**	**38.51**

Source: MNRE and State Nodal Agencies.

NA – Not Available.

Annexure XV
(Refer to para 4.3 in Chapter VIII)

Details of State wise physical verification of Biogas plants by Audit

Location	When installed	Number inspected	Audit observation
Andhra Pradesh			
Khammam and Warangal districts	NA	70	Audit observed that out of 70 plants inspected five were not working. The reasons for non-functioning of Biogas Plant were: damage of main gate wall, not feeding of cow dung regularly by the beneficiary
Arunachal Pradesh			
Papumpare, West Siang, Lower Subansiri, East Siang districts	1998-99, 2003, 2007, 2011 and 2013	25	Audit observed that out of 25 plants inspected 23 were not working (seven in West Siang, four in Papumpare, four in Lower Subansiri and eight in East Siang districts were not working. two plants in Papumpare were not working). Reason for not working were that beneficiaries lacked interest in operating the plants as alternate fuel i.e. LPG, was readily available. None of the plants had serial/ identification number on a metal strip.
Assam			
	NA	36	Audit observed that out of 36 plants inspected seven were not working. Of these, two were not working since installation and two were found defective.
Bihar			
Five districts[1]	NA	8	Audit observed that out of eight plants inspected one was not working.
Haryana			
6 sites/villages in 5 selected districts (Kurukshetra, Hisar, Panipat, Jhajjar and Bhiwani)	During 9th,10th and 11th Five Year Plans	56	Audit observed that out of 56 plants inspected, 41 were not functional.
Jharkhand			
Deoghar district	2005-06 and 2008-09	7	Audit observed that out of seven plants inspected, six were not working due to the reason of non-formation of gas.
Jammu & Kashmir			
	NA	9	Audit observed that out of nine plants inspected two were not working due to breakage in drum and one plant faced some problem in gas pipe. Complaint for rectification was reportedly not attended by the technician though repeatedly informed about the problem on telephone.

[1] Ara, Jehanabad, Nalanda (Bihar Sharif), Patna and Vaishali (Hazipur).

Location	When installed	Number inspected	Audit observation
Karnataka			
Udupi, Shimoga and Tumkur	NA	50	Audit observed that out of 50 plants inspected 11 were not working and the beneficiaries were using LPG and firewood for cooking purposes as the above plants were not functioning for the last two to three years.
Mizoram			
Aizwal	NA	10	Audit observed that out of 10 plants inspected three were not working, as their tanks were damaged due to rusting. Of these, two were installed in 1994 and one in 2008.
Madhya Pradesh			
	NA	75	All working.
Nagaland			
Phek and Mokokchung	NA	5	Audit observed that out of five plants inspected four were not working and one was not commissioned.
Punjab			
11 site in 5 districts.	NA	74	Audit observed that out of 74 plants inspected five were not working;the five beneficiaries were also using LPG cylinders
Uttar Pradesh			
Barabanki	2010-11	2	Audit observed that two plants inspected were not operated, as the *Dhaba* where they were installed had closed down.
Lodhaan village, Varanasi	NA	2	Audit observed that two plants inspected were not working due to the non-availability of raw material.
Total		**429**	**112 not working.**

Note – NA – Not Applicable.

Annexure XVI
(Refer to para 2.1 Chapter IX)

The State wise targets and achievements under Remote Village Electrification Programme for the period 2007-14

Sl No.	State	Number of villages/ hamlets verified by REC	Number of villages / hamlets sanctioned	Number of villages/ hamlets completed	Percentage of eligible hamlets/ villages covered	Percentage of target achieved	CFA released (in ₹ crore)
	(i)	(ii)	(iii)	(iv)	(iv) X 100/(ii)	(iv) X 100/(iii)	
1	Andhra Pradesh	112	13	13	12	100	0.31
2	Arunachal Pradesh	145	0	141	97	-	4.94
3	Assam	2,385	1,691	1,913	80	113	117.92
4	Bihar	80	NA	NA	NA	NA	NA
5	Chhattisgarh	1,621	314	243	15	77	16.21
6	Delhi	NA	NA	NA	NA	NA	0.25
7	Goa	0	19	19	-	100	0.10
8	Gujarat	49	0	0	Nil	-	0.35
9	Haryana	149	92	241	163	262	0.69
10	Himachal Pradesh	1	0	20	2,000	Nil	NA
11	Jammu & Kashmir	1,035	619	232	22	37	69.91
12	Jharkhand	832	251	206	25	82	44.25
13	Karnataka	173	59	30	17	51	1.26
14	Kerala	73	49	49	67	100	3.39
15	Madhya Pradesh	972	424	547	56	129	31.51
16	Maharashtra	362	82	230	64	280	22.20
17	Manipur	166	49	106	64	216	5.21
18	Meghalaya	158	66	124	78	188	2.30
19	Nagaland	11	8	8	73	100	0.83
20	Odisha	2,116	1,528	1,491	70	98	52.44
21	Sikkim	NA	NA	NA	NA	NA	0.08
22	Rajasthan	493	103	253	51	246	21.53
23	Tamil Nadu	130	32	30	23	94	0.67
24	Tripura	583	479	606	125	127	27.40

Sl No.	State	Number of villages/ hamlets verified by REC	Number of villages / hamlets sanctioned	Number of villages/ hamlets completed	Percentage of eligible hamlets/ villages covered	Percentage of target achieved	CFA released (in ₹ crore)
25	**Uttar Pradesh**	419	257	335	80	130	22.66
26	**Uttarakhand**	234	173	164	70	195	6.77
27	**West Bengal**	93	24	6	6	25	27.88
	Total	**12,392**	**6,332**	**7,007**	**57**		**481.06**

Source: MNRE.

Note: 1. Information was not available in respect of Bihar, Punjab and Mizoram.

2. Delhi, Goa, Manipur, Sikkim and Tripura were not part of audit scrutiny.

3. CFA – Central Financial Assistance, REC - Rural Electrification Corporation Limited.

Annexure XVII

(Refer to para 6 in Chapter IX)

Details of State wise physical verification of Remote Village Electrification systems by Audit

Type of System	Location	When Installed	Number inspected	Non-Functional	Reasons
Andhra Pradesh					
SHLS and SSLS	Suddakunta village	2008-09	284 SHLSs and 34 SSLSs	-	Out of five households electrified none was occupied, and one house holder was staying at Venkatadripalem village.
	Billagondi hamlet		37 SHLSs and 4 SSLSs	37 SHLSs and two SSLSs were not working	
Arunachal Pradesh					
Biomass Gasifier Power Plants	Rani and Balijan villages	2014	2 plants (328 beneficiaries)	2	Lack of interest from beneficiaries and availability of quality power supply from the local grid.
SHLS	Pusi Doke and Tabasora illages	2002-03 and 2005-06	132	-	122 were not available.
SHP	Panya	2009	1	1	Not working due to machinery defects.
SHLS	Taba Sora	2002-03 and 2005-06	73	63	After supply of electricity through local grid, APEDA did not monitor the functioning of systems.
	Pusi Doke		59	59	
Biomass Gasifier Power Plants		2004-2005	12 Villages (1,024 beneficiaries)	12	APEDA did not certify that hamlets/villages were un-electrified. However, these were covered under RGGVY. APEDA/State Govt. neither re-deployed the energy systems to other needy places nor connected the plants to local grid for continuous operation as per RVE Programme Guidelines. Expenditure of ₹ 87.14 lakh was rendered unfruitful.
Jharkhand					
SHLS	Jojogora, Potka, E. Singhbhum	Between November 2007 and August 2008	36	21	Not known.
			04	03	
	Papragaru, Potka, E. Singhbhum	Between November 2007 and August 2008	19	13	Not known.
			02	01	

Type of System	Location	When Installed	Number inspected	Non-Functional	Reasons
	Gamarkocha, Potka, E. Singhbhum	Between November 2007 and August 2008	13	05	Not known.
			01	Nil	
	Sirka, Angara, Ranchi	2003-04	286	13	Failure of battery.
			05	01	
	Bisha, Angara, Ranchi	2003-04	424	65	Failure of battery.
			06	06	
Kerala					
SHLS	Agali Gram Panchayat	Not Available	5	5	There were cases of lack of preventive maintenance. No arrangement was done to ensure functionality of systems after AMC.
Jammu & Kashmir					
SHLS	Five[1] villages of Poonch district.	Not Available	90	4	In 15 systems only one tube was working, in three systems only one tube was provided.
Maharashtra					
SPP (17.5 kW)	Ozarkhed village, district Nashik	March 2008	1	Not working since February 2013	Performance BG of ₹ 9.98 lakh was required to be forfeited, which was not done.
Madhya Pradesh					
SSLS	Salkanpur/ Sehore	December 2012	196	-	Poles damaged because of poor quality of GI pipes and delay in maintenance.
Odisha					
SHLS and SSLS	Jamudiha village of Keonjhar district	Not Available	925 SHLSs and 93 SSLSs.	177 SHLSs and 35 SSLSs	In 17 villages covering 909 households, 55 SHLSs and 6 SSLSs were missing. Defunct due to non-functioning of batteries.
Rajasthan					
SHLS	Five villages of Alwar district	Not Available	50	8	Supplier did not take care during AMC period. Beneficiaries repaired the systems on their own or got it repaired from the open market. Proper training for handling of systems was not given to the beneficiaries. Beneficiaries were not aware of the AMC and did not know the

[1] Ghani, Nangali, Bandi Chechian, Qusba and Khandi.

Type of System	Location	When Installed	Number inspected	Non-Functional	Reasons
					contact numbers of representative of the AMC providers. Under RVE, home lighting systems of only 37 watt was provided which was not sufficient according to the beneficiaries as informed during the physical verification.
Uttarakhand					
SHLS	Saibhar, Munsyar, Pithoragarh	Not Available	63	39	There were cases of non working of batteries. Further, beneficiary charges were not collected and proper training was also not given to beneficiaries.
West Bengal					
SHLS		Not Available	13	12	Due to non-maintenance and poor monitoring by WBREDA.
Total			**2,870**	**585**	**183 systems missing.**

Note - Solar Home Lighting System (SHLS), Solar Street Lighting System (SSLS), Solar Power Plant (SPP), Solar Lantern (SL) and Solar Water Pump (SWP).

Annexure XVIII
(Refer to para 2.6 Chapter XII)

Solar Photovoltaic Division

Fabrication of CU (In Ga) Se-2/Cds thin film solar cells on large area glass and flexible substrate using sputtering selenization technique

The project was sanctioned (May 2009) to Kalinga Institute of Industrial Technology University, Bhubaneswar with a financial outlay of ₹ 57.07 lakh and expenditure of ₹ 56.85 lakh was incurred. The project proposal envisaged filing of patents and publication of research papers. However, no patent was filed and no research paper was published in any Indian/foreign journals as an outcome of this project.

There was delay of nine months in completion of project. Project completion report (PCR) was not evaluated by the Ministry's scientists or external experts. In the absence of proper evaluation of PCR by the experts, it could not be concluded that the objectives of the project were achieved. Further, the project was not monitored by experts/Institutions as stipulated in the sanction. MNRE stated (May 2015) that constraints like manpower and infrastructural facilities led to the deficiencies.

Novel Doped 3-D Nanoporous oxides for Dye-Sensitized Solar Cells

The project was sanctioned (March 2009) to Indian Institute of Petroleum, Dehradun with a financial outlay of ₹ 38 lakh and expenditure of ₹ 25.30 lakh was incurred. The progress of the project was not reviewed after September 2012. PCR had still not been submitted (July 2015).

The project proposal envisaged filing of patents and publication of research papers. However, no patent was filed and no research paper published in any Indian/foreign journals as an outcome of this project.

Development of an improved electrical-optical model for the simulation of Hetero junction with Intrinsic Thin Layer (HIT) Solar Cells

The project was sanctioned (February 2011) to Indian Association for Cultivation of Science, Kolkata with a financial outlay of ₹ 25.30 lakh and expenditure of ₹ 5.18 lakh was incurred. The project scheduled to be completed by February 2013 was still ongoing. The project was last reviewed by Project Monitoring Committee in September 2012. Thereafter, the progress of the project was not reviewed. No efforts were made by the Ministry for early completion of the project. Quarterly reports mandated by the sanction were not received in timely manner. MNRE stated (May 2015) that Project Investigator had not responded even after many reminders.

Exploitation of Unique Properties of Quantum Dots for Efficient Energy Harvesting in Solar Cells

The project was sanctioned (May 2011) to Center for Emerging Technology, Jain University, Bangalore with a financial outlay of ₹ 37.16 lakh and expenditure of ₹ 25.34 lakh was incurred. The project scheduled to be completed by May 2014 was still ongoing. No efforts were made by the MNRE for early completion of the project. Quarterly monitoring

mandated by the sanction was not done. MNRE stated (May 2015) that extension of the project would be considered in next RDD&D Sectoral Project Appraisal Committee meeting.

Design and Development of Organic Solar Cell Sub-Modules

The project was sanctioned (March 2011) to Indian Institute of Technology, Kanpur with a financial outlay of ₹ 18.05 crore and expenditure of ₹ 4.64 crore was incurred. The project scheduled to be completed by March 2014 was granted extension upto March 2015 without proper justification. The progress of the project was not reviewed by the experts on the quarterly basis as mandated by the sanction. As per sanction, a minimum of 10 research papers and 10 patents were the likely outcome of the project. However, none was found on record as of September 2014. MNRE stated (May 2015) that the project has further been extended upto September 2015.

Solar Thermal Division

Development of testing of 3TR liquid desiccant based solar multi-utility heat pump

The project was sanctioned (September 2008) to Indian Institute of Technology, Mumbai with a financial outlay of ₹ 61.98 lakh and expenditure of ₹ 47.90 lakh was incurred. MNRE sanctioned this project with specific deliverable objectives in terms of output and were to extent of setting the target commercial cost of the unit between ₹ 2.75 lakh to ₹ 3.25 lakh. The project was to be completed in September 2011 and final PCR including the field test report was to be submitted by August 2011. IIT Mumbai also assured of first phase of commercialization to start by June/July 2012 with help of the industry partner M/s Mech World Echo, Nashik. A total of ₹ 48.85 lakh was released by MNRE. In February 2012, MNRE requested Project Investigator (PI) to submit final PCR as committed. The final PCR had not yet been received (May 2015). Further, field testing data about the deliverable objectives and proposed commercialization had not taken place for reasons not on record. In absence of receipt of final PCR and its vetting by independent expert it could not be assured that the project objectives were achieved. The details of monitoring exercise by MNRE on the project were not available on record.

MNRE stated (May 2015) that field data takes some time and accounts of the project are yet to be settled.

Development and demonstration of automatic two axis tracking paraboloid Solar Thermal concentrator

The project was sanctioned (September 2011) to M/s Clique Developments Limited, Mumbai with a financial outlay of ₹ 55.83 lakh and expenditure of ₹ 51.53 lakh was incurred. The project scheduled to be completed by September 2012 was still ongoing beyond the scheduled date of completion (May 2015). No efforts were made by the Ministry for early completion of the project. The project proposal envisaged filing of patents. However, no patent was filed.

Integrating and Hybridizing a-2 Axis tracking Parabolic Dish Based concentrated Solar Thermal with Bio-mass based Thermic Fluid Heating System in a process industry

The project was sanctioned (May 2013) to M/s Megawatt Solutions Private Limited, Noida with a financial outlay of ₹ 1.64 crore and expenditure of ₹ 95.72 lakh was incurred. The project scheduled to be completed by August 2014 was still ongoing beyond the scheduled date of completion. No efforts were made by the Ministry for early completion of the project. MNRE stated (May 2015) that performance monitoring of the project is yet to commence.

Hydrogen Energy and Fuel Cell Division

Lean limit extension for spark ignited direct injection engine through on board Non-Thermal Plasma conversion

The project was sanctioned (February 2010) to Annamalai University, Tamil Nadu with a financial outlay of ₹ 39.25 lakh and expenditure of ₹ 29.32 lakh was incurred. The project scheduled to be completed by February 2013, was still not completed (October 2014) even after grant of extension upto 31 December 2013. The audited UCs were still awaited. The project envisaged transfer of technology developed. However, no technology was transferred under this project. MNRE stated (July 2015) that PCR has now been accepted by Project Monitoring Committee in its meeting held on November 2014.

Use of Hydrogen (upto 30 *per cent*) as fuel blended with compressed natural gas in internal combustion engine

The project was sanctioned (September 2007) to Society of Indian Automobile Manufacturers, New Delhi with a financial outlay of ₹ 6.34 crore and expenditure of ₹ 5.10 crore was incurred. The project scheduled to be completed by September 2009 was still not complete. A sum of ₹ 1.94 crore was released by the Ministry on this project. The project was granted extension upto December 2013. The progress of the project was last reviewed in June 2013 and the project was not reviewed thereafter by the Ministry. The audited UCs were awaited in the Ministry. The project proposal envisaged transfer of technology developed under the project and filing of patent. However, no technology was transferred under this project and no patent filed. MNRE stated (July 2015) that PCR has now been accepted by Project Monitoring Committee in its meeting held on November 2014.

Design and development of Hydrogen Gas Burner for Industrial Application

The project was sanctioned (February 2010) to Indian Institute of Technology, Kanpur with a financial outlay of ₹ 23.90 lakh and expenditure of ₹ 21.55 lakh was incurred. The project scheduled to be completed by February 2013 was completed in November 2013 after a delay of nine months. PCR submitted in November 2013 was not evaluated by external experts. Further, in the project proposal, industry participation was proposed. However, this was not visible in the project.

Development of the prototype photo reactor for the hydrogen production from hydrogen sulphide under natural sun light

The project was sanctioned (December 2011) to Centre for Materials for Electronics Technologies, Pune with a financial outlay of ₹ 22.40 lakh and expenditure of ₹ 22.40 lakh was incurred. The project scheduled to be completed by December 2013 was granted extension upto July 2014 and further upto July 2015 without justification.

Theoretical Investigation on likely to be favorable factors of helical Carbon Nanotubes for Enhanced Hydrogen absorption

The project was sanctioned (February 2008) to Thiagarajar College of Engineering, Madurai with a financial outlay of ₹ 24.72 lakh and expenditure of ₹ 24.24 lakh was incurred. The project scheduled to be completed by August 2009 was completed in October 2010 after a delay of 14 months. PCR was submitted in October 2010 was not evaluated by external experts.

CNT Doped Polymeric Membranes for Hydrogen Purification

The project was sanctioned (February 2008) to University of Rajasthan, Jaipur with a financial outlay of ₹ 30 lakh and expenditure of ₹ 27.25 lakh was incurred. PCR was not evaluated by the external experts.

Numerical and Experimental Analysis for the development of a metal Hydride based Hydrogen Energy Storage device

The project was sanctioned (August 2008) to Indian Institute of Technology, Guwahati with a financial outlay of ₹ 33.45 lakh and expenditure of ₹ 26.31 lakh was incurred. The project scheduled to be completed by August 2011 was competed in August 2012 after a delay of one year. The PCR submitted in August 2012 was not evaluated by external experts. The project proposal envisaged transfer of technology and filing of patents. However, no patent was filed as an outcome of the project, nor was there transfer of technology.

Generation of Hydrogen from bio-mass derived glycerol

The project was sanctioned (February 2008) to Indian Institute of Chemical Technology, Hyderabad with a financial outlay of ₹ 46.43 lakh and expenditure of ₹ 46.43 lakh was incurred. The project scheduled to be completed by February 2010 was competed in March 2011 after a delay of more than one year. The project was extended upto August 2010 and further upto February 2011 without any justification. The PCR submitted in March 2011 was not evaluated by external experts. Further, project proposal envisaged filing of patents and publication of research papers. However, no patent was filed and no research paper was published in any Indian/Foreign journals.

Survey on inventory and quality of by product Hydrogen potential in selected major sectors in India

The project was sanctioned (February 2008) to University of Petroleum and Energy Studies, New Delhi with a financial outlay of ₹ 15.27 lakh and expenditure of ₹ 17.56 lakh (which included ₹ 2.29 lakh contributed by the University) was incurred. The project scheduled to be completed by November 2008 was completed in January 2010 after a delay of 14 months. Progress of the project was not reviewed by the Ministry's committee and PCR was not evaluated by external experts.

Non-thermal Plasma Assisted Direct Decomposition of Hydrogen Sulphide into Hydrogen and Sulphur

The project was sanctioned (February 2009) to National Institute of Technology, Tamil Nadu with a financial outlay of ₹ 31.48 lakh and expenditure of ₹ 25.78 lakh was incurred. The project scheduled to be completed by February 2012 was completed in February 2013 after a delay of one year. The PCR was not evaluated by external experts. The project proposal envisaged transfer of technology and filing of patents. However, no patent was filed as an outcome of the project, nor was there transfer of technology.

Synthesis of Magnesium based Hydrogen Storage Alloys with Lower Absorption Temperatures

The project was sanctioned (July 2010) to Non-Ferrous Materials Technology Development Centre, Hyderabad with a financial outlay of ₹ 82.66 lakh and expenditure of ₹ 82.66 lakh was incurred. The project scheduled to be completed by July 2013 was still ongoing (October 2014) even after extension upto March 2014. No efforts were made by the Ministry for early completion of project even after release of ₹ 82.66 lakh on the project. MNRE stated (July 2015) that PCR has now been accepted by Project Monitoring Committee in its meeting held on September 2014.

Development of Transition Metal tantalates and oxynitrides for water splitting and pollution abatement

The project was sanctioned (February 2008) to Institute of Minerals and Materials Technology, Bhubaneswar with a financial outlay of ₹ 35.54 lakh and expenditure of ₹ 32.54 lakh was incurred. The project scheduled to be completed by February 2011 was competed in May 2012. The project proposal envisaged filing of patents, however, no patent was filed. The PCR was not evaluated by external experts.

Development of Semiconductor Nano-Composites for photo catalytic water splitting into hydrogen and oxygen under solar light irradiation

The project was sanctioned (January 2011) to Indian Institute of Chemical Technology, Hyderabad with a financial outlay of ₹ 59.66 lakh and expenditure of ₹ 49.58 lakh was incurred. The cost of the project was revised from ₹ 47.86 lakh to ₹ 59.66 lakh due to increase in cost of equipment without proper justification. The project scheduled to be completed by January 2014 was still ongoing. MNRE stated (July 2015) that PCR has now been received and would be placed for consideration by Project Monitoring Committee.

Establishment of Hydrogen Production and Utilization facility through Photovoltaic-Electrolyser system

The project was sanctioned (February 2011) to University of Petroleum and Energy Studies, New Delhi with a financial outlay of ₹ 14.02 crore and expenditure of ₹ 7.20 crore was incurred. The cost of the project was revised from ₹ 11.15 crore to ₹ 14.02 crore due to addition of items viz equipment and civil work. The project scheduled to be completed by February 2014 was still ongoing even after extension upto October 2014. No efforts were

made by the Ministry for early completion of project. MNRE stated (July 2015) that it was the first project of its kind implemented in the country and therefore took more time in its implementation than originally envisaged.

Hydrogen Storage Properties of complex hydrides

The project was sanctioned (February 2008) to Indian Institute of Technology, Mumbai with a financial outlay of ₹ 40.48 lakh and expenditure of ₹ 40.48 lakh was incurred. The cost of the project was revised from ₹ 36.00 lakh to ₹ 40.48 lakh due to revision in cost of manpower without any justification. The project scheduled to be completed by February 2011 was completed in March 2012 after a delay of more than one year. The project proposal envisaged transfer of technology. However, no technology was transferred after completion of the project. The PCR submitted in March 2012 was not evaluated by external experts.

Design and development of functional hybrid nano structures for photo electro-chemical water splitting

The project was sanctioned (May 2010) to Institute of Minerals and Materials Technology, Bhubaneswar with a financial outlay of ₹ 55.09 lakh and expenditure of ₹ 52.96 lakh was incurred. The project scheduled to be completed by May 2013 was completed in February 2014 after a delay of nine months. The PCR submitted in May 2014 was not evaluated by external experts. Further, project proposal envisaged filing of patents. However, no patent was filed as an outcome of the project.

Development of Methanol Electrolyser

The project was sanctioned (February 2008) to Southern Petrochemicals Industries Corporation Science Foundation with a financial outlay of ₹ 25.02 lakh and expenditure of ₹ 22.02 lakh was incurred. The project scheduled to be completed by February 2009 was completed in May 2009 after a delay of three months. PCR was not evaluated by external experts. The project proposal envisaged filing of patents and publication of research papers. However, no patent was filed and no research paper was published in any Indian/foreign journals as an outcome of this project.

Bio Fuel Division

Design development and evaluation of pilot scale ethanol production from cassava starch

The project was sanctioned (September 2008) to Tamil Nadu Agriculture University with a financial outlay of ₹ 35 lakh and expenditure of ₹ 30.45 lakh was incurred. A third party monitoring mechanism was to be introduced and a provision of two *per cent* of project cost (capped at ₹ 10 lakh) was also made. It was observed that though PI kept sending regular progress reports but neither an expert committee was identified for monitoring as per guidelines nor the project was ever monitored or visited by MNRE scientists as mandated by the sanction.

Project proposal envisaged participation of two industries for help in establishing/ demonstration of the pilot plant and to popularize the technology for wider adoption. Further, transfer of technology to entrepreneur/ line departments was proposed. From the record, it could not be ascertained whether the technology was actually transferred as proposed. Further, contribution of participating industries to popularize the pilot plant could not be substantiated. MNRE stated (May 2015) that involvement of industry was not mandatory and was optional only. Reply contradicts the MNRE's broader vision of including industry participation, wherever possible.

Demonstration of Modular Pyrolysis Unit to produce Bio Oil from Agro-Industrial Biomass Wastes and Methodology for Analysis, Use and Upgradation of Bio Oil

The project was sanctioned (October 2010) to The Energy and Resources Institute, New Delhi with a financial outlay of ₹ 1.70 crore and MNRE has released ₹ 1.55 crore. As per RDD&D guidelines of MNRE, for all project proposal with cost exceeding ₹ one crore, an expert committee would be deputed to have on the spot assessment of capabilities and capacity of project team and available technical and administrative setup at the Institution and submit a report to the Ministry. However, no such committee was constituted.

Project sanction mandated an expert committee for monitoring the progress at half yearly intervals. Though annual progress reports were received from Project Investigator (PI), MNRE did not constitute/monitor the progress at mandated half yearly intervals. Indian Oil Corporation Limited was stated to be a 'partner in kind' for the project for analytical activities for characterization, use and upgradation of bio oil. The project completion report indicated non availability/susceptibility of Indian industry to test the oil in combustion applications and as transport fuel. In light of this bottleneck, contribution of IOCL towards the project could not be ascertained and industry participation in the project remained merely on paper.

Design and development of dual operating pilot scale bio-reactor system for comparative simulations studies on algal cultivation

Project was sanctioned (September 2011) to M/s Abellon Clean Energy Limited, Gujarat, with a financial outlay of ₹ 21.38 lakh, after receiving comments from three subject experts. Comments of one expert required modification of the proposal and response to the comments were received from the PI in June 2011. Such response should have been forwarded to the concerned expert and revised acceptance obtained. However, the same was not available on record.

In midterm monitoring report of 30 July 2012, it was indicated that the reactor was defective in designing and modifications were suggested for implementation. The project was completed in October 2012 and second installment of ₹ 4.30 lakh was released in December 2012. MNRE after accepting the project completion report and releasing ₹ 9.30 lakh, intimated the adverse comments in system design to PI in May 2013, which was procedurally incorrect.

Bio Energy Division

Addressing Novel Applications of Current Generation Using Micro Organisms

The project was sanctioned (February 2008) to Central Electrochemical Research Institute, Tamil Nadu with a financial outlay of ₹ 24.69 lakh and expenditure of ₹ 26.03 lakh (which included ₹ 1.32 lakh contributed by the Institute) was incurred. The project scheduled to be completed by February 2011 was completed in September 2011 after a delay of seven months. PCR was submitted in April 2012. Progress of the project was not monitored by any committee of experts. Further, project proposal envisaged filing of patents. However, no patent was filed as an outcome of the project.

State of the Art Review of Global Research and Development in Polygeneration Facilities for the production of Liquid Fuels & Chemicals for Cogeneration of Power

The project was sanctioned (December 2007) to Indian Institute of Technology, Mumbai with a financial outlay of ₹ 1.50 lakh and expenditure of ₹ 0.75 lakh was incurred. There was delay of three years in submission of PCR by PI. The project was completed in June 2008 and PCR was submitted in June 2011. Progress of the project was not monitored by any committee of experts.

Biogas Refrigerator for Urban, Semi Urban and Rural Area Applications

The project was sanctioned (August 2008) to Annamalai University, Tamil Nadu with a financial outlay of ₹ 11 lakh and expenditure of ₹ 2.50 lakh was incurred. The project was not completed as the participating industry failed to fabricate the refrigerator system as per design mentioned in the project proposal. The progress report submitted upto February 2009 was accepted as final report. The project was abandoned midway without achieving the objectives. The expenditure of ₹ 2.50 lakh incurred by the MNRE remained unfruitful.

High Efficiency Biogas Gensets

The project was sanctioned (September 2008) to Indian Institute of Science, Bangalore with a financial outlay of ₹ 33 lakh and expenditure of ₹ 26.53 lakh was incurred. There was delay of eight months in submission of PCR by PI. The project was completed in September 2011 and PCR was submitted in June 2012. The project proposal envisaged filing of patents. However, no patent was filed as an outcome of this project.

Development of Household Wastes and Sanitation Device with biogas recovery

The project was sanctioned (September 2008) to National Institute for Interdisciplinary Science and Technology, Kerala with a financial outlay of ₹ 19.89 lakh and expenditure of ₹ 24.89 lakh (which included ₹ five lakh contributed by the Institute) was incurred. The project, scheduled to be completed by September 2010, was completed in December 2012 after a delay of more than two years. Progress of the project was not monitored by any committee of experts. The project proposal envisaged filing of patents. However, no patent was filed as an outcome of this project. Further, the modular household wastes sanitation device with biogas recovery system, which was one of the objectives was not developed.

Comparative Evaluation of Performance and Mass Emissions of an Automotive Passenger Vehicle fuelled with the Enriched Biogas using Field Trial Tests

The project was sanctioned (March 2011) to Indian Institute of Technology, Delhi with a financial outlay of ₹ 18.09 lakh and expenditure of ₹ 11.71 lakh was incurred. The project scheduled to be completed by March 2013 was completed in July 2013 after a delay of more than four months. There was further delay of one year in submission of PCR. The PCR was submitted in June 2014. The comments of experts on PCR were awaited. The Ministry did not pursue the matter in this regard with the experts.

Biogas Slurry Handling and Biomanure Management

The project was sanctioned (March 2011) to Indian Institute of Technology, Delhi with a financial outlay of ₹ 16.91 lakh and expenditure of ₹ 8.45 lakh was incurred. The project scheduled to be completed by March 2013 was completed in December 2013 after a delay of more than nine months. Progress of the project was not monitored by any committee of experts. The project proposal envisaged filing of patents. However, no patent was filed as an outcome of this project.

Development of Humic Acids Extraction Lab Scale Plant for Biogas Spent Slurry and its dissemination for Industrial Application

The project was sanctioned (November 2011) to Maharana Pratap University of Agriculture and Technology, Rajasthan with a financial outlay of ₹ 55.55 lakh and expenditure of ₹ 27.83 lakh was incurred. The project proposal envisaged filing of patents and publication of research papers. However, no patent was filed and no research paper was published in any Indian/Foreign journals as an outcome of this project.

Development of integrated ultrasonically aided biomethanation plant

The project was sanctioned (February 2008) to Institute of Minerals and Material Technology, Bhubaneswar with a financial outlay of ₹ 33 lakh and expenditure of ₹ 12.50 lakh was incurred. The project scheduled to be completed by August 2010 was completed in October 2012 after a delay of more than two years. Progress of the project was not monitored by any committee of experts.

Development of a Thermophillic Biodigester for Decentralized Treatment of Organic Wastes

The project was sanctioned (October 2008) to The Energy and Resources Institute, New Delhi with a financial outlay of ₹ 14.73 lakh and expenditure of ₹ 9.53 lakh was incurred. The project scheduled to be completed by October 2010 was completed in January 2011 after a delay of more than three months. Progress of the project was not monitored by any committee of experts. The project proposal envisaged publication of research papers. However, no research paper was published in any Indian/Foreign journals as an outcome of this project.

Wind Division

Experimental Characteristics of Wind Turbine Blading

The project was sanctioned (July 2010) to Park College of Engineering and Technology, Tamil Nadu with a financial outlay of ₹ 15.80 lakh and expenditure of ₹ 9.30 lakh was incurred. Project scheduled to be completed by June 2012, was completed in May 2014, after a delay of 23 months. UCs for ₹ 7.75 lakh were not submitted. Industries were not involved in the project. PCR was not evaluated by external experts.

Everybody's battery charger

The project was sanctioned (June 2009) to RMK Engineering College, Tamil Nadu with a financial outlay of ₹ 5.10 lakh and expenditure of ₹ 1.62 lakh was incurred. Project scheduled to be completed by December 2010, was completed in December 2013, after a delay of three years. Industries were not involved in the project. PCR was not evaluated by external experts.

Wind Energy Centre at Amrita University, Coimbatore to conduct Diploma Course

The project was sanctioned (August 2010) to Amrita Viswa Vidya Peetham, Tamil Nadu with a financial outlay of ₹ 1.53 crore and expenditure of ₹ 93 lakh was incurred. Project scheduled to be completed by August 2013, was discontinued midway in March 2013 after incurring expenditure of ₹ 93 lakh. UCs for ₹ 17.01 lakh were not submitted.

Health/conditions maintaining at experimental Wind farms

The project was sanctioned (June 2010) to Centre for Wind Energy Technology, Tamil Nadu with a financial outlay of ₹ 40.89 lakh. Project was to be completed in two phases. First phase of Project scheduled to be completed by June 2011, was still not completed as of March 2014 even after expenditure of ₹ 36.22 lakh was incurred. Industries were not involved in the project and PCR was not submitted.

Capacity Building in Wind Mill Sector for conducting Certificate and Diploma Course

The project was sanctioned (August 2010) to PSG College of Technology, Tamil Nadu with a financial outlay of ₹ 1.67 crore. Project scheduled to be completed by August 2013, was discontinued midway in March-2013 after expenditure of ₹ 55.66 lakh was incurred. UCs for ₹ 6.22 lakh were not submitted, Industries were not involved in the project and PCR was not submitted.

Power quality issues in Grid connected Wind farms

The project was sanctioned (July 2009) to RMK Engineering College, Tamil Nadu with a financial outlay of ₹ 37.38 lakh. Project scheduled to be completed by June 2012, was completed in December 2013, after a delay of 18 months. UCs for ₹ 10.34 lakh were not submitted by the implementing agency. Industries were not involved in the project. PCR was not evaluated by external experts.

Power evacuations studies for Grid Integrated Wind Energy conversion system

The project was sanctioned (June 2009) to Anna University, Tamil Nadu with a financial outlay of ₹ 16 lakh and expenditure of ₹ 11.86 lakh was incurred. Project scheduled to be completed by December 2011, was completed in November 2013, after a delay of 23 months. UCs for ₹ 5.53 lakh were not submitted. Industries were not involved in the project nor was the PCR evaluated by external experts.