16

STANDING COMMITTEE ON ENERGY

(2015-16)

SIXTEENTH LOK SABHA

MINISTRY OF NEW AND RENEWABLE ENERGY

DEMANDS FOR GRANTS
2016-17

SIXTEENTH REPORT

LOK SABHA SECRETARIAT

NEW DELHI

April, 2016/Vaisakha, 1938 (Saka)

SEVENTEENTH REPORT

STANDING COMMITTEE ON ENERGY
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(SIXTEENTH LOK SABHA)

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Presented to Lok Sabha on 02.05.2016

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LOK SABHA SECRETARIAT
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CONTENTS

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(2015-16)

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INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this Eighteenth Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2016-17.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 4th April, 2016. The Committee wish to express their thanks to the representatives of the Ministry for appearing before the Committee for evidence and furnishing the information, desired by the Committee in connection with examination of Demands for Grants (2016-17).

3. The Report was considered and adopted by the Committee at their sitting held on 27th April, 2016.

4. The Committee place on record their appreciation for the valuable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

5. For facility of reference and convenience, the recommendations of the Committee have been printed in bold letters in Part-II of the Report.

NEW DELHI
29th April, 2016
Vaisakha 09, 1938 (Saka)

DR. KIRIT SOMAIYA
Chairman,
Standing Committee on Energy

REPORT

PART I

NARRATION ANALYSIS

CHAPTER I

INTRODUCTORY

1.1 Over the years, the renewable energy sector has emerged as a significant player in the grid connected power generation capacity. There has been a visible impact of renewable energy in the Indian energy scenario during the last five years. Currently, India has an installed capacity of 289.8 GW (as on 29.2.2016), out of which 39.9 GW accounts for new and renewable source of energy, mainly from wind, solar, bio power and small hydro units.

1.2 The Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. The Ministry has been facilitating the implementation of broad-spectrum programmes covering more or less the entire range of new and renewable energy. These programmes broadly seek to supplement conventional fossil-fuel –based power through harnessing wind, solar, small hydro and bio power; take renewable energy systems to remote rural areas for lighting, cooking and motive power; use renewable energy in urban, industrial and commercial applications; and develop alternate fuels and applications for stationary, portable and transport uses, apart from supporting research, design and development of new and renewable energy technologies, products and services.

1.3 The role of the MNRE includes facilitating research, design, development, manufacture and deployment of new and renewable energy systems/devices for power generation, portable and stationary applications in rural, urban, industrial and commercial sectors and transportation, through:

i) Resource assessment, Technology Mapping, Benchmarking, and related activites;
ii) Identify Research, Design and Development thrust areas and facilitate work on the same;
iii) To develop Standards, specifications and perforrmance parameters at par with international levels, and facilitate industry in attaining the same;
iv) Align costs of new and renewable products and services with international levels, and facilitate industry in attaining the same;
v) Appropriate international level quality assurance accreditation, and facilitate industry in obtaining the same;
vi) Provide sustained feed-back to manufacturers on performance parameters of new and renewable energy prodcuts and service with the aim of effecting continuous upgradation so as to attain state of the art in the shortest possible time span;
vii) Facilitate industry in becoming internationally competitive;
viii) Identify areas in which new and renewable energy products and services need to be deployed in keeping with the goal of national energy security and energy independence; and
ix) Deployment strategy for various indigenously developed and manufactured new and renewable energy products and serivices.

1.4 The MNRE has been allocated the following subjects/business under the Allocation of Business Rules:

- Research and development of biogas and programmes relating to biogas units;
- Commission for Additional Sources of Energy (CASE) (non-functional since the beginning of the 11th Plan).
- Solar Energy, including solar photovoltaic (SPV) devices and their development, production and application;
- All matters relating to small/mini/micro hydel projects of and below 25 MW capacity;
- Programmes relating to improved chulhas and research and development thereof (transferred to States at the end of the 9th Plan);
- Indian Renewable Energy Development Agency (IREDA);
- Research and development of other non-conventional/renewable sources of energy and programmes relating thereto;

- Tidal energy;
- Integrated Rural Energy Programme (IREP) (transferred to States w.e.f. the 11th Plan);
- Geothermal Energy; and
- Bio-fuels: (i) National Policy; (ii) Research, development and demonstration on transport, stationary and other applications; (iii) setting up of a National Bio-fuels Development Board and strengthening the existing institutional mechanism; and (iv) overall coordination concerning bio-fuels.

CHAPTER II

12TH FIVE YEAR PLAN PERFORMANCE

2.1 The financial allocation of the Ministry for the entire 12th Plan period was Rs.19113 crore. The details of the physical targets and financial allocation under various Programme are given at *Annexure - I*

2.2 The year-wise physical achievement vis-a-vis targets during the first 4 years of the 12th Plan period, viz. 2012-13, 2013-14, 2014-15 and 2015-16 as furnished by the Ministry is as under:

Table 2.2 12th Plan physical targets and achievement (as on 29.02.2016)

S. No.	Programme / system		2012-13		2013-14		2014-15		2015-16 (as on 29.02.2016)	
			Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
GRID POWER (Capacities in MW)										
1	Wind Power		2500	1698.8	2500	2083.3	2000	2312	2400	1773.68
2	Small Hydro		350	236.9	300	171.4	250	251.61	250	139.05
3	Bio Power		105	114.7	105	101.6	100	45.00	400	400.00
4	Bagasse Cogeneration		350	352.2	300	310.92	300	360.00		
5	Waste to Power (Indstl./Urban)		20	6.4	20	10.50	20	8.50	10	0.00
6	Solar Power		800	754.1	1100	962.10	1100	1112.07	1400	1788.10
	Total		**4125**	**3163.10**	**4325**	**3640**	**3770**	**4089.18**	**4460.00**	**4100.83**
OFF – GRID (Capacities in MWeq)										
7	Waste to Power		20	9.36	10	17.15	10	13.28	10.00	14.13
8	Biomass (Non-bag Cogen)		60	88.6	80	60.7	80	60.05	60.00	50.00
9	Biomass Gasifiers	Rural	1.5	0.6	1	0.6	0.8	0.61	2.00	0.20
		Indstl	10	7.5	9	7.1	8	6.15	6.00	8.67
10	Aero-Gens/ Hybrid systems		0.5	0.4	1	0.1	0.5	0.27	0.50	0.15
11	SPV Systems		30	34.4	40	49.6	60	60.00	50.00	81.00
12	Water Mills (WMs) / Micro/mini-hydel plants		2	2.08	2	1.6	4	4.00	2.00	0.00
	Total		**124**	**142.94**	**143**	**136.85**	**163.3**	**144.36**	**130.5**	**154.15**
DECENTRALISED RENEWABLE ENERGY SYSTEMS AND OTHER PROGRAMMES										
13	Remote Village Electrification (Nos. of Villages+ Hamlets)		-	975	-	860	-	313		
14	Family type Biogas Plants (No. in Lakh)		1.3	1.2	1.1	0.84	1.1	0.83	1.1	0.50

2.3 The year-wise actual expenditure vis-a-vis BE/RE during the first 4 years of the 12th Plan period, viz. 2012-13, 2013-14, 2014-15 and 2015-16 is as under:

Table 2.3 Plan Outlay and Expenditure during 12th Plan period (as on 28.03.2016)

(Amount in Rs crore)

Resource/ Sector	**12th Plan Outlay**	**FY 2012-13**			**FY 2013-14**			**FY 2014-15**			**FY 2015-16**		
		BE	**RE**	**Actual Exp.**	**BE**	**RE**	**Actual Exp.**	**BE**	**RE**	**Actual Expendi-ture**	**BE**	**RE**	**Exp. as on 28.03.16**
Grid-Interactive & Distributed Renewable Power	13,690.00	825.00	759.00	748.73 (98.64%)	1,030.00	1218.66	1132.65 (92.94%)	2018.00	1845.00	1844.65 (99.98%)	2410.00	3902.00	3811.97 (97.69%)
RE for Rural Applications	2,115.00	175.00	124.00	116.31 (93.79%)	150.00	113.29	109.21 (96.39%)	157.50	153.50	148.64 (96.83%)	160.00	109.21	97.83 (89.58%)
RE for Urban, Industrial and Commercial Applications	800.00	22.00	15.50	15.17 (97.87%)	21.00	10.10	10.00 (99%)	14.00	14.00	12.43 (88.79%)	4.62	4.62	4.50 (97.40%)
RD&D in RE	910.00	194.00	126.00	108.90 (86.42%)	160.00	148.50	136.97 (92.23%)	149.50	128.00	127.45 (99.57%)	90.00	106.00	62.46 (58.92%)
Supporting Programmes	1,598.00	169.00	125.50	117.68 (93.76%)	160.00	248.13	230.20 (92.77%)	180.00	378.50	369.32 (97.57%)	123.05	124.40	120.94 (97.21%)
Total Gross Budgetary Support (GBS)	**19,113.00**	**1,385. 00**	**1150.00**	**1,106.79 (96.24%)**	**1,521.00**	**1738.68**	**1619.03 (93.11%)**	**2519.00**	**2519.00**	**2502.49** (99.34%)	**2787.67**	**4246.23**	**4097.70** (96.50%)

2.4 Elaborating the financial performance of the 12th Plan, the Ministry, in a note, stated:

> "The financial achievements were 96.24% of RE during 2012-13, 93% of RE during 2013-14 and 99.34 % of RE during 2014-15. The minor shortfall during 2012-13 is largely on account of inadequate proposals from States under some programmes specially North Eastern Projects, and non-receipt of utilization certificates due from some of the States. The shortfall during 2013-14 vis-à-vis RE was on account of non-utilization of funds amounting to about Rs.183 crore provided during the last quarter of the year in the third batch of supplementary demands for grants for IMG approved projects. It is expected that total funds will be utilized during 2015-16".

2.5 When asked about the reasons for short fall in physical achievement vis-a-vis target under various programmes of the Ministry, the Committee were informed:

"Wind Power: The major reason for low achievements in wind sector in 2012-13 and 2013- 14 was discontinuation of accelerated depreciation benefit and generation based incentive in the sector. Both these benefits have now been reinstated.
Small Hydro Power: Delay in obtaining statuary clearances (Forest area clearance, local area difficulties, etc. and court cases in some of the States)
Solar Power: Minor shortfall was due to delay in allocation of unallocated thermal power by the Ministry of Power.
Biogas: High cost of installation of biogas plants and improved supply of LPG of Rural areas.

2.6 On a query about the action plan/strategy of the Ministry to achieve the shortfall in the target set (physical & financial) during the terminal period of the 12th Plan, the Ministry stated:

"The Ministry's Action Plan/Strategy is prepared keeping in view the revised targets set for renewable energy beyond the 12th Plan period, viz. the Ministry has proposed renewable power capacity to 1,75,000 MW till 2022, comprising 100,000 MW Solar, 60,000 MW Wind, 10,000 MW Biomass and 5000 MW Small Hydro. To achieve these capacities the action plan of the Ministry includes the initiatives both on policy aspects as well as on programmes side. On policy aspects, actions of Ministry include amendments in Electricity Act, 2003, formulating Renewable Energy Policy as well as sectoral policies for solar, wind, biomass and small hydro, formulating new policies for sunrise Sectors (offshore wind, geothermal, etc., setting up Small Hydro Power Mission and National Wind Energy Mission, including revision in the JNNSM to make it comprehend to the revised targets. On the Programmes side, major programme initiatives include development of Solar Parks / Solar Zones and Ultra Mega Solar Power Projects, Solar Roof Top Programme, Implementation of Solar Projects along international border to use the available land to light our borders by solar energy replacing the diesel gen-sets being used presently, operationalization of 300 MW Solar PV Projects by defense establishment and para military forces, setting up the grid-connected solar projects on canal tops and banks to utilize the potential already available, setting up solar based pumps for irrigation and drinking water supply, motivating CPSUs such as CIL, NTPC, etc., setting up small solar projects through un-employed graduates a village panchayats, etc., setting up rooftop solar projects through IPDS and MNRE scheme, strengthening SECI and IREDA by enhancing their capacities. Besides, Ministry is mobilizing support from various Ministries/Departments for the promotion of renewable energy, e.g. fiscal and financial incentives from Ministry of Finance; relevant amendments in Tariff Policy from Ministry of Power have already been made, making provision of roof top solar a condition precedent/mandatory reform under its Smart City scheme through Ministry of Urban Development".

CHAPTER III

ANALYSIS OF DEMANDS FOR GRANTS OF MNRE FOR 2016-17

3.1 The MNRE presented Demand No. 61 to Parliament for the financial year 2016-17 on 10th March, 2016. The Plan and Non-Plan provisions made in the Revenue and the Capital Sections of the Budget are as under:

Demand No. 61

Table 3.1 Plan and Non-Plan Provisions for 2016-17

(Rs. in crore)

	Plan	Non-Plan	Total
Revenue Section	5000	35.79	5035.79
Capital	0.00	0.00	0.00
Grand Total (Revenue + Capital)	5000	35.79	5035.79

3.2 Budget Estimates for the year 2016-17 vis-à-vis that of Budget Estimates/Revised Estimates (BE/RE) of 2015-16 and Actuals of 2014-15 of Plan and Non-Plan provisions made in the Revenue and the Capital Sections of the Budget are as under:

Table 3.2 BE/RE and Actuals of Plan and Non-Plan Provisions

	Actual 2014-2015			**Budget 2015-2016**			**Revised 2015-2016**			**Budget 2016-2017**		
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
Revenue	406.70	13.48	420.18	192.67	15.54	208.21	154.53	12.77	167.30	5000.00	35.79	5035.79
Capital	*95.00*	*0.00*	*95.00*	*95.00*	*0.00*	*95.00*	92.00	2.77	94.77	0.00	0.00	0.00
Total	**501.70**	**13.48**	**515.18**	**287.67**	**15.54**	**303.21**	**246.53**	**15.54**	**262.07**	**5000.00**	**35.79**	**5035.79**

3.3 A statement showing the details of the Budget Estimates for the year 2016-17 vis-à-vis that of Budget Estimates/Revised Estimates (BE/RE) of 2015-16 and Actuals of 2014-15 is given at *Annexure-II*.

3.4 The Plan Outlay of the Ministry of New and Renewable Energy during the year 2015-16 and for the year 2016-17 is given below:

Table 3.4 Plan Outlay for 2015-16 and 2016-17

Rs. in crore

Components of Plan Outlay of MNRE	**2015-16**		**2016-17**
	BE	RE	BE
Gross Budgetary Support	287.67	246.23	-
Support from NCEF	2500.00	4000.00	5000.00
IEBR	3373.06	5402.55	9118.85
Total	6160.73	9648.78	14118.85
NCEF= National Clean Energy Fund			

3.5 The total outlay of the Ministry for the financial year 2016-17 is Rs.14118.85 crore. Out of this, support from National Clean Energy Fund (NCEF) includes Rs.5000 crore, the Internal and Extra Budgetary Resources (IEBR) constitutes Rs. 9118.85 crore.

3.6 The Committee were also informed that Plan outlay of Rs. 9115.40 crore (excluding IEBR) was sought from Ministry of Finance for the year 2016-17. However, an amount of Rs. 5000.00 crore was allocated as budgeted Plan outlay for the year 2016-17. A detailed statement in this regard as provided by MNRE is given below:

Table 3.6 Proposed and actual allocation for the year 2016-17

Scheme-Wise BE - 2016-17 (Proposal)		**Proposed (Rs. in Crore)**	**Actual (Rs. in crore)**
S.No.	**Programme**	**Plan**	**Plan**
I. Grid Interactive and Distributed Renewable Power Grid			
1	Wind Power	800.00	365.00
2	Hydro Power	150.00	112.00

3	Biomass Power	45.00	30.00
4	Solar Power	5000.00	2350.00
5	Energy Storage	60.20	16.00
6	Green Energy Corridors	250.00	500.00
7	Solar Energy Corporation of India(SECI)	400.00	100.00
8	Demonstration of Renewable Energy Application and Information, Education and Communication	20.25	7.00
9	Externally Aided Projects	7.00	39.00
	Sub-Total	**6732.45**	**3519.00**
II. Off-Grid/ Distributed & Decentralized Renewable Power			
10	Wind-Solar hybrid	25.00	7.00
11	Water mills/micro hydel	30.00	10.00
12	Bio Power	30.00	30.00
13	Solar Power	1400.00	700.00
14	Remote Village Electrification	58.00	50.00
15	Energy Storage		2.00
16	Biogas Programme	185.00	142.00
17	Cookstoves	107.95	16.00
18	Other Renewable Applications, including Support to States	37.00	20.00
19	Externally Aided Projects	6.00	6.00
	Sub-Total	**1878.95**	**983.00**
III. Research, Development and International Co-operation			
20	Bio Energy	110.50	8.00
21	Solar Energy	110.00	90.00
22	Small Hydro Power	2.00	3.00
23	New Technologies	22.00	20.00
24	Wind Energy	10.00	3.00
25	International Relations-International Cooperation, including investment promotion	1.00	220.00
26	New & Innovative Projects, NURE, WREM	60.50	44.00
27	HRD & Training	10.00	55.00
28	Energy Storage	25.00	2.00
	Sub- Total	**351.00**	**445.00**
IV. Autonomous Bodies			
29	NISE	43.00	20.00
30	NIWE	100.00	25.00
31	NIRE	10.00	8.00
	Grand Total	**9115.40**	**5000.00**

3.7 When asked about the reason for the hike in Plan Outlay for the year 2016-17 and as to whether the allocation would be sufficient to meet the requirement of the physical targets of the various programmes of the Ministry, the Committee were informed:

> "Only a nominal increase of 17.75% is provided in BE-2016-17 (Rs 5000.00 crore) over R.E of 2015-16 (Rs 4246.23 crore).
>
> The major hike in the budget is for the implementation of solar energy programmes. However, additional funds will be required for achieving higher targets set up in Renewable energy sector which will be sought at the time of R.E. and Supplementaries.

3.8 On being asked about the Plan outlay, including Budgetary Support and Internal and Extra Budgetary Resources (IEBR) for the last three years, both BE/RE and actual break-up, the Ministry, in a note, furnished:

(Rs. in Crore)

	2013-14			**2014-15**			**2015-16**		
	BE	**RE**	**Actual Exp**	**BE**	**RE**	**Actual Exp**	**BE**	**RE**	**Actual Exp (as on 28.03.2016)**
GBS+ NCEF*	1519.00	1738.68	1619.03	2519.00	2519.00	2502.49	2787.67	4246.23	4097.70
IEBR	2394.00	2966.23	2955.56	3000.00	3346.58	3280.18	3373.06	5402.55	6376.54
Total	**3913.00**	**4704.91**	**4574.59**	**5519.00**	**5865.58**	**5782.67**	**6160.73**	**9648.78**	**10474.24**
*Support from NCEF for regular schemes of the Ministry has been introduced from FY 2013-14									

3.9 When asked about the variations in the BE/RE and actual expenditure during the last three years, the Ministry, in a note, explained:

a) During 2013-14, RE was enhanced on account of allocation of funds amounting to about Rs. 183 crore from NCEF for Inter-Ministerial Group (IMG) approved projects. Besides, a new procedure to meet the part of the funding requirement of MNRE was introduced whereby the funding for ongoing programmes under Grid connected and Distributed Renewable energy and RD&D were met from NCEF and other programmes from the regular GBS to Plan Outlay. Under this new system RE was kept almost

at the BE level and additional funds were provided from NCEF for IMG approved projects.

b) During 2014-15, the enhancement in BE over BE 2013-14 was mainly on account of three new schemes/programmes announced in the Finance Minister's Budget Speech viz. Solar Park Scheme (Rs. 500 crore), Installing one lakh solar pumps for irrigation and drinking water (Rs.400 crore) and grid connected solar projects on canal tops and banks (Rs.100 crore).

c) During 2015-16, expenditure is likely to be met in full.

3.10 On being asked about the major heads which showed shortfall in utilization of funds earmarked for expenditure during the year 2015-16, the Ministry stated that there will be no shortfall in utilization of funds during 2015-16. The expenditure was over 96.50% of the R.E as on 28.03.2016. The detailed statement of actual expenditure vis-a-vis B/E/RE furnished by the Ministry is as below:

Table 3.10 Expenditure during 2015-16

S. No.	Scheme/ Programme	BE	RE	RE *minus* BE	AE (As on 29.02.2016)	Exp as per cent to RE
		A	B	C	D	E
1	Grid Interactive & Distributed Renewable Power	2410.00	3902.00	(+1492.00)	3811.97	97.69
2	RE for Rural Applications	160.00	109.21	-50.79	97.83	89.58
3	RE for Urban, Industrial. & Commercial Applications	4.62	4.62	0.00	4.50	97.40
4	RD&D in RE	90.00	106.00	(+16.00)	62.46	58.92.
5	Supporting Programmes	123.05	124.40	(+1.35)	120.94	97.21
Total		**2787.67**	**4246.23**	**1458.56**	**4097.70**	**96.50**

3.11 The Committee further asked about quarter-wise expenditure made during the last three years. The Ministry furnished the following information:

Table 3.11 Quarter-wise expenditure during last three years

Year	BE	RE	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total
2013-14	1519.00	1738.68	519.59	274.32	285.88	539.24	1619.03
2014-15	2519.00	2519.00	354.04	752.44	635.93	760.08	2502.49

2015-16	2787.67	4246.23	1054.30	969.92	620.60	1452.88 (as on 28.03.2016)	4097.70 (as on 28.03.2016)

3.12 When enquired whether the quarterly expenditure during the last three years was as per the plan and norms, the Ministry replied:

> " as per the circulars of Ministry of Finance, the general norms prescribed for phasing of expenditure include (i) not more than 1/6th of BE could be spent during April and May, (ii) during the last quarter (Jan – March) and during the last month of March, ceiling of expenditure prescribed are 33% and 15% of the BE respectively, (iii) by end December, minimum expenditure, therefore, should reach to 67%, to avoid any surrender of plan funds at the end of financial year. Therefore, first quarter normally does not exceed 20% of the BE, as a result of which, bulk of the expenditure is required to be done during 2nd and 3rd quarters to reach the minimum level of 67% by the end of December, i.e. 3rd quarter. Keeping these norms in view, quarterly phasing of expenditure of the Ministry during last two years and the current year has been quite as per these norms. A periodical monitoring mechanism is already in place to ensure that phasing of expenditure is as per the norms prescribed by the Ministry of Finance".

3.13 Elaborating the utilization of budget during the previous years and the budgetary allocation for the year 2016-17, the Secretary, MNRE, during the evidence desposed before the Committee:

During the last year i.e. 2015-16 the Government has allocated Rs. 4246 corore out of which 99.56 percent was spent. This percentage is the highest in these 4-5 year. We are grateful to the Committee because with your support we have got the highest ever allocation of Rs.5000 crore. Two years before it was Rs. 1500 crore. Now, three times of it has been allocated. Much more fund was allocated on the recommendation of the Committee. Ministry of Finance is very helpful. It was increased from 100 to 200 and later from 200 to 400. We are benifitting from this and we will submit the concerned details.

CHAPTER IV

POWER FROM RENEWABLES: GRID INTERACTIVE AND OFF-GRID RENEWABLE POWER

4.1 According to the Ministry's report, their focus has been to promote the development and deployment of various technologies for increasing the capacity of grid interactive and off-grid renewable power. Towards this end, the Government has been offering a number of fiscal and financial incentives to investors to increase the penetration of renewable power in the energy and electricity mix of the country. India's renewable energy installed capacity has grown from 3.9 GW in 2003-04 to about 39 GW in December, 2015. Wind energy has been the predominant contributor to this growth. It also accounts for 25.1 GW or 64.5 percent of the installed capacity followed by solar power 4.9 GW, biomass power 4.7 GW and small hydro power 4.1 GW.

4.2 An allocation of Rs.3519 crore for grid power and Rs.983 crore for off-grid has been made under the Grid Interactive and off-Grid renewable power for the year 2016-17. The physical and financial details of the programmes, as furnished by the Ministry, are as follows:

Table 4.1
Physical & financial details under grid interactive and off-grid renewable power during 2016-17

S. No.	Programme / system	Financial Rs in Crore	Physical (in MW)
GRID POWER			
1	Wind Power	365.00	4,000
2	Hydro Power	112.00	250
3	Biomass power/ Baggase Cogeneration/ Gasification	20.00	400
4	Urban and Industrial Waste to Power	10.00	10
5	Solar Power	2350.00	12,000

6	Energy Storage	16.00	9.50 MWh (Storage Capacity)
7	Green Energy Corridors	500.00	-
8	Solar Energy Corporation of India (SECI)	100.00	-
9	Demonstration of Renewable Energy Applications and Information, Education and Communication	7.00	-
10	Externally Aided Projects	39.00	-
	Total	3519.00	
OFF – GRID			
11	Wind-Solar hybrid and Wind Resource Assessment in North east States	7.00	0.3 MWeq
12	Water mills/ micro hydel	10.00	1 MW + 500 water mills
13	Urban/ Industrial Waste-to-Energy	30.00	15 MWeq
14	Biomass Power (Non-Bagasse)		60 MWeq
17	Gasifier (Rural electrification and Industry)		10 MWeq
18	Solar Power (following devices will be promoted- Solar Street Lights, Solar Home Lighting System, Solar Lanterns, Solar Pumps etc. further CST systems will also be promoted)	700.00	100 MWeq
19	Remote Village Electrification (RVE)	50.00	-
20	Energy Storage	2.00	1000 kWh (Storage Capacity)
21	Biogas Programme	142.00	Deployment of 1.00 lakh plants
22	Cook Stoves	16.00	2.50 lakh improved cookstoves
23	Other Renewable Energy Applications (Solar Cities including smart cities, Green Buildings etc.) including Support to States	20.00	-
24	Externally Aided Projects	6.00	-
	Total	983.00	

4.3 When asked about the physical achievements vis-a-vis targets during the last three years under grid and off-grid power, the Ministry furnished:

Table 4.2 Physical achievements under grid and off-grid power during last three years

Rs. in crore

S. No.	Programme / system		2013-14		2014-15		2015-16 (as on 29.02.2016)	
			Target	**Ach.**	**Target**	**Ach.**	**Target**	**Ach.**
Grid Power (capacities in MW)								
1	Wind Power		2500	2083.3	2000	2312	2400	1773.68
2	Small Hydro		300	171.4	250	251.61	250	139.05
3	Bio Power		105	101.6	100	45.00	400	400.00
4	Bagasse Cogeneration		300	310.92	300	360.00		
5	Waste to Power (Indstl./Urban)		20	10.50	20	8.50	10	0.00
6	Solar Power		1100	962.10	1100	1112.07	1400	1788.10
	Total		**4325**	**3640**	**3770**	**4089.18**	**4460.00**	**4100.83**
Off-Grid (capacities in MWeq)								
7	Waste to Power		10	17.15	10	13.28	10.00	14.13
8	Biomass (Non-bag wCogen)		80	60.7	80	60.05	60.00	50.00
9	Biomass Gasifiers	Rural	1	0.6	0.8	0.61	2.00	0.20
		Indstl	9	7.1	8	6.15	6.00	8.67
10	Aero-Gens/ Hybrid systems		1	0.1	0.5	0.27	0.50	0.15
11	SPV Systems		40	49.6	60	60.00	50.00	81.00
12	Water Mills (WMs) / Micro/mini-hydel plants		2	1.6	4	4.00	2.00	0.00
	Total		**143**	**136.85**	**163.3**	**144.36**	**130.5**	**154.15**
Decentralised Renewable Energy Systems and other Programmes								
13	Remote Village Electrification (Nos. of Villages+ Hamlets)		-	860	-	313		
14	Family type Biogas Plants (No. in Lakh)		1.1	0.84	1.1	0.83	1.1	0.50

4.4 On being enquired about the financial utilisation vis-à-vis allocation during the last three years, the Ministry furnished:

Table 4.3 Financial utilisation under grid and off-grid power during last three years

(Rs.in crore)

Resource/ Sector	FY 2013-14			FY 2014-15			FY 2015-16		
	BE	**RE**	**Actual Exp.**	**BE**	**RE**	**Actual Expendi-ture**	**BE**	**RE**	**Exp. as on 28.03.16**
Grid-Interactive & Distributed Renewable Power	1,030.00	1218.66	1132.65 (92.94%)	2018.00	1845.00	1844.65 (99.98%)	2410.00	3902.00	3811.97 (97.69%)
RE for Rural Applications	150.00	113.29	109.21 (96.39%)	157.50	153.50	148.64 (96.83%)	160.00	109.21	97.83 (89.58%)
RE for Urban, Industrial and Commercial Applications	21.00	10.10	10.00 (99%)	14.00	14.00	12.43 (88.79%)	4.62	4.62	4.50 (97.40%)
RD&D in RE	160.00	148.50	136.97 (92.23%)	149.50	128.00	127.45 (99.57%)	90.00	106.00	62.46 (58.92%)
Supporting Programmes	160.00	248.13	230.20 (92.77%)	180.00	378.50	369.32 (97.57%)	123.05	124.40	120.94 (97.21%)
Total Gross Budgetary Support (GBS)	**1,521.00**	**1738.68**	**1619.03 (93.11%)**	**2519.00**	**2519.00**	**2502.49** (99.34%)	**2787.67**	**4246.23**	**4097.70** (96.50%)

A. Wind Energy

4.5 According to the Ministry's Report, Wind Energy is the most successful renewable energy option in India and is the fastest growing renewable energy technology for generating grid connected power amongst various renewable energy sources. The Ministry's wind power programme covers survey and assessment of wind resources, and facilitation of implementation of demonstration and private sector projects through various fiscal and promotional policies. A total capacity of 25088 MW has been established up to December, 2015 in the country. India is the fourth largest wind power producer in the world, after China, USA and Germany.

4.6 On a query regarding State-wise potential and installed capacity of wind energy, the Ministry furnished:

Table 4.6 State-wise wind energy potential and installed capacity

S.No	State/UT	Potential (MW @100m)	Total Capacity (MW) up to January,2016
1.	Andaman & Nicobar	8	-
2.	Andhra Pradesh	44229	1155.12
3.	Chhattisgarh	77	-
4.	Goa	1	-
5.	Gujarat	84431	3876.50
6.	Karnataka	55857	2886.53
7.	Kerala	1700	35.10
8.	Lakshadweep	8	-
9.	Madhya Pradesh	10484	1200.19
10.	Maharashtra	45394	4638.35
11.	Odisha	3093	-
12.	Puducherry	153	-
13.	Rajasthan	18770	3877.54
14.	Tamil Nadu	33800	7514.76
15.	Telangana	4244	-
16.	West Bengal	2	-
17	Others	-	4.30
	Total	**302,251 MW /302 GW**	25188.39

4.7 When asked about the achievements vis-à-vis targets during the last three years, the Ministry furnished:

Table 4.13 Achievements during last three years under wind energy

S. No.	Year	Target (MW)	Achievements (MW)
1	2013-14	2500	2079
2	2014-15	2000	2312
3	2015-16	2400	1744.78 (Up-to January 2016)

4.8 Regarding non-achievement of target under wind energy, the Ministry stated that targets for the 2013-14 could not be fully achieved due to discontinuation of GBI and

Accelerated Depreciation benefits from April 2012. However, after restoration of GBI in September 2013 and AD in July 2014, the capacity addition picked-up and targets were over-achieved in 2014-15 and are likely to be over-achieved during 2015-16.

4.9 On being asked about the fund utilization vis-à-vis allocation for the last three years, the Ministry furnished:

Table 4.9 Fund utilization for the last three years under wind energy

Rs. in crore

S.No	FY	(Rs in crores)	Utilization(Rs in crores)
1	2013-14	300	300
2	2014-15	566	566
3	2015-16	314	314

4.10 Regarding physical target and financial allocation for the year 2016-17, the Committee were informed that a capacity addition of 4100 MW for wind power projects for the year 2016-17 and budget allocated for Generation Based Incentives (GBI) is Rs. 365 crore.

4.11 When asked as to whether the allocation would be sufficient to meet the physical target set, the Ministry stated that the total requirement for disbursement of GBI would be around Rs.1100 crore, including the pending claims for the year 2015-16. The request for additional funds requirement will be submitted in the supplementary grants.

4.12 The major activities/Projects proposed to be undertaken by the Ministry during 2016-17 are as follows:

i) Finalization of Repowering Policy
ii) Finalization of Wind-Solar Hybrid Policy
iii) Finalization of National Wind Energy Mission
iv) Establishment of National Wind Energy Mission Directorate and start its activities

4.13 When asked about the provisions of fiscal and financial incentives provided by the Government in the wind energy sector, the Ministry, in a note, stated that fiscal and financial incentives available for wind power projects include concessional custom duty and special additional duty, excise duty exemptions, income tax holiday, Accelerated Depreciation (AD), etc. For those who do not avail AD benefit, GBI is available.

4.14 Elaborating the provisions under the Generation Based Incentive (GBI) and the status regarding reinstatement of the Accelerated Depreciation(AD) benefit to wind energy developers/investors, the Ministry stated:

> **"**Under the GBI Scheme, GBI will be provided to wind electricity producers @ Rs. 0.50 per unit of electricity fed into the grid for a period not less than 4 years and maximum period of 10 years with a cap of Rs. 100 lakhs per MW. The total disbursement in a year will not exceed one-fourth of the maximum limit of the incentive i.e. Rs 25.00 lakhs per MW during the first four years. The GBI scheme will be applicable for entire the 12th Plan period. The benefit of 80% accelerated depreciation has been reinstated by the new Government in July 2014.

4.15 Regarding the progress of the National Wind Energy Mission (NWEM), the Ministry stated that draft EFC has been prepared and is under progress.

B. Solar Energy

4.16 India is endowed with a very vast solar energy potential. Most parts of the country have about 300 sunny days. Average solar radiation incident over the land is in the range of 4-7kWh per day. The solar energy can be utilized through solar photovoltaic technology which enables direct conversion of sunlight into energy and solar thermal technologies which utlize heat content of solar energy into useful applications.

4.17 When asked about the estimated potential vis-à-vis commission/installation of solar energy in the country, the Ministry furnished:

Table 4.5 State-wise details of estimated potential vis-à-vis commission/installation of solar energy

Sr.No.	State/UT	Solar Potential (GWp) (Feb. 2015)	Total Commissioned Capacity (MW) as on 14/03/2016
1	Andhra Pradesh	38	475.7
2	Arunachal Pradesh	9	0.3
3	Assam	14	-
4	Bihar	11	5.0
5	Chhattisgarh	18	73.2
6	Goa	1	-
7	Gujarat	36	1059.1
8	Haryana	5	12.8
9	Himachal Pradesh	34	-
10	Jammu & Kashmir	111	-
11	Jharkhand	18	16.0
12	Karnataka	25	114.2
13	Kerala	6	12.0
14	Madhya Pradesh	62	678.6
15	Maharashtra	64	378.7
16	Manipur	11	-
17	Meghalaya	6	-
18	Mizoram	9	-
19	Nagaland	7	-
20	Odisha	26	66.9
21	Punjab	3	356.3
22	Rajasthan	142	1264.4
23	Sikkim	5	-
24	Tamil Nadu	18	851.9
25	Telangana	20	392.4
26	Tripura	2	5.0
27	Uttar Pradesh	23	140.0
28	Uttarakhand	17	5.0
29	West Bengal	6	7.2
30	Delhi	2	6.7
31	UTs	1	15.7
32.	Others/Rooftop		168
TOTAL		**750**	**6104.3**

4.18 The initial targets of the Jawaharlal Nehru National Solar Mission (JNNSM) which was launched on 11th January, 2010 include (i) deployment of 20,000 MW of grid connected solar power by 2022, (ii) 2,000 MW of off-grid solar applications, including 20 million solar lights by 2022, (iii) 20 million sq. m. solar thermal collector area, (iv) to create favourable conditions for developing solar manufacturing capability in the country, and (v) support R&D and capacity building activities to achieve grid parity by 2022.

4.19 The Cabinet, in its meeting held on 17.6.2015, has approved revision of cumulative targets under NSM from 20,000 MW by 2021-22 to 1,00,000 MW by 2021-22 for Grid Connected Solar Power Projects. The revised target of 1,00,000 MW is planned to be achieved in 7 years, period and broadly consists of 40 GW Grid connected Rooftop projects and 60 GW large and medium size land based solar power projects. During the year, a total capacity of 1135 MW has been commissioned, taking the cumulative installed capacity of grid connected solar power to 4879 MW as on 31.12.2015.

4.20 The phase-wise/year-wise physical targets of the JNNSM, as furnished by the Ministry:

Phase-I: Year 2010 to 2013,
Phase-II: Year 2013-17,
Phase-III: Year 2017-22.

Year/Category	Rooftop Solar	Large Scale Solar Power Projects	Total
2015-16	200	1,800	2,000
2016-17	4,800	7,200	12,000
2017-18	5,000	10,000	15,000
2018-19	6,000	10,000	16,000

2019-20	7,000	10,000	17,000
2020-21	8,000	9,500	17,500
2021-22	9,000	8,500	17,500
Total	**40,000**	**57,000**	**97,000***

*3,743 MW commissioned upto 2014-15.

4.21 On being asked about the actual financial expenditure vis-à-vis allocation of the Solar Mission, the Ministry furnished:

Table 4.8 Actual expenditure under JNNSM

Year	B.E.	R.E.	Exp.
2011-12	55.00	41.50	41.40
2012-13	80.00	80.00	79.83
2013-14	150.00	150.00	149.74
2014-15	750.00	391.50	391.50
2015-16	1066.00	1716.00	1090.47 (Upto Feb-2016)

4.22 When asked about the physical target and financial allocation under solar energy for the year 2016-17, the Committee were informed that a physical target of 12,000 MW for grid-interactive solar power with an outlay of Rs. 2350 crore has been fixed for the year 2016-17.

4.23 During the evidence, the Secretary, MNRE, stated:

Earlier I talked about solar alliance. During January when French President came here, the foundation stone was laid. We have added 3009 Megawatt in soalr Sector this year. We haven't added this much capacity before. In wind energy it is 3330 Megawatt which is also the highest. It was 3197 MW in 2012. It is higher this year as AD came down from 80 percent to 40 percent and therefore, peule registered it fastly. It also happened since in other States too prices are getting lower.

Under the scheme of Solar Power, passsed by the Parliament 32 Solar parks in 20 States have been sanctioned. When they will start functioning we will get 99400 MW. During this year i.e. 2015-16 we have floated the tender for 19,000 MW because to achieve the target of one lakh MW 12,000 MW commission has to be done in 2016-17. Therefore, we have floated the tenders for 20,000 MW. 99 percent targets has been achieved and these is no problem of 1000 MW. we have got a road map.

4.24 On being asked as to whether the budgetary allocation will be sufficient to achieve the physical target set for the year 2016-17, the Ministry stated:

> **"**Budget allocated is less than the requirement. Efforts will be made to get more additional funds at Supplementary stage or under National Clean Energy Fund (NCEF)".

4.25 When the Committee desired to know the detailed action plan of the Ministry to achieve the target set under JNNSM, the Ministry, in a reply, stated:

> "Ministry has drawn a detailed strategic plan to achieve the targets of 100 GW set under the Mission. Year-wise and state-wise targets have been set. ix different schemes as mentioned in Point No.6 are in operation. National Thermal Power Corporation (NTPC), Solar Energy Corporation of India (SECI) and States are working with full dedication to achieve the targets. Ministry is regularly monitoring the progress. For example, the target of 2016-17 is 12,000 MW, for which, it has been planned to float tenders (by NTPC, SECI and States) of 18,000 MW.

4.26 On being asked about the R&D efforts on solar technologies to make them competitive and cost effective, the Ministry, in a note, stated:

> "The Ministry has been supporting Research, Design & Development (RD&D) in solar energy through various institutions/manufacturers for cost effective technology. Ministry provides up to 100% financial support to Government/non-profit research organizations/NGOs and 50% to industry/civil society organizations. The Ministry has endeavored to accelerate ongoing R&D efforts on different aspects of Solar Photovoltaic and Solar thermal technologies, including multi-disciplinary research, with the objective of improving the efficiency, systems performance and reducing the cost. A comprehensive policy

for research & development has been put in place to achieve the objectives of cost reduction and efficiency enhancement. The details of activities being carried under Solar R&D are given below:

- A National Centre for Photovoltaic Research and Education (NCPRE) at IIT-Bombay was approved in September, 2010. Setting up of this center was included in the Mission Policy document. This Centre is actively engaged in research and education in PV and 18% solar cell efficiency has been achieved and various inverters have also been developed. NCPRE II is also under consideration by the Ministry after NCPRE-I success.
- An initiative to set up Centre for Excellence in area of Solar Passive Architecture and Green Building Technologies" at CEPT University – Ahmedabad. CEPT has developed the Generation of database for Building Materials and Laboratory for testing building materials. This is a first kind of Laboratory in Asia for Green building.
- A megawatt scale National Solar Thermal Power Test and Simulation facility has been set up at Ministry's National Institute of Solar Energy (NISE) by IIT Bombay and a consortium of industries under a project of MNRE. The test facility is aimed at helping designing solar thermal power projects based on technology parameters and climatic conditions of the locations.
- An R&D-cum-demonstration project for development of Central Receiver Technology for solar thermal power generation has been sanctioned to M/s Sunburn Energy, Gurgoan. The project aims to design and develop solar tower with an output of 1MW thermal energy. NISE is actively involved in this project.
- Development and demonstration of 1 MW capacity solar thermal power R&D project with 16-hour thermal storage at Mount Abu, with co-funding from German Ministry and Indian industry. The project is first of its kind to provide thermal storage of 16 hours and will be based on fully indigenously developed solar dish technology. This project is expected to complete in May 2016.
- A project has been sanctioned to develop IIT-Jodhpur as a Centre of Excellence in Solar Thermal Research and Education. Designed and installation of Solar Air Tower Simulator (SATS) facility is completed. It is being extended for inclusion of solar convective furnace. Developed high temperature solar thermal research laboratory and so far they achieved 360 ^{o}C at a concentration of 420 suns and put target 600C in the next phase.
- A project "development of improved DS process for mc-Si wafers and their application to Solar Cells" has been sanctioned to SSN College of Engineering, Tamilnadu in January 2015. The goal of the project is to grow multi-crystalline silicon ingots with enhanced efficiency equivalent to monocrystalline wafer using directional solidification process with lower cost and higher yield.
- Innovative project "Experimental grid tied solar PV power generation on a water body" sanctioned to IGNOU Community College in 2014. The plant has now been installed and model, testing, protocol and the standards are in process. Now similar floating solar project have been installing in consulting with this project implementation.
- Design of soft-switching converter with adaptive MPPT Controller and design, development and evaluate a laboratory prototype of an efficient smart control system for domestic roof top PV applications with bidirectional metering provision

and increased efficiency of system 90-95% like projects sanctioned to Birla Institution of Technology and Science , Pilani, Rajasthan, Electrical Research and Development Association, ERDA, Gujarat and JamiaMiliaIslamia university, New Delhi have been approved in 2014-15.

- A project " 30 kW cross liner-CSP system Test Unit " sanctioned to Rajiv Gandhi ProudyogikiVishwavidyalaya, University Institute of Technology, (RGVP) Bhopal in 2014.
- Design, Construction and Demonstration of zero energy building for Solar Decathlon Europe 2014 project sanctioned to Department of Energy Science and Engineering, IIT Bombay in 2014-15.
- Dr. V K Sethi, Ram Krishna Dharmarth Foundation University, Bhopal High is implementing a R&D project with USA collaboration (Rensselaer Polytechnic Institute, Troy, New York)entitled Energy Density Thermal Energy Storage for Concentrated Solar Plant".

4.27 Detailing the project under solar energy, the Secretary, MNRE during the evidence informed the Committee:

> 'Total 1500 MW is these and 1000 MW is being set up by NTPC. It's first part consists of 250- MW. Thre was a compulsory condition in this that in the first 250 MW cells module should have been manufactured in India. It's testing has been done and in April 250 MW will be commisioned. Further to make it 1000 MW, NTPC is again installing 750 MW and tenders have been floated for this first now. It will take 12-13 months. Tenders for remaining 500 MW have been floated by Solar Energy Corporation. It will also take around one year. Present the single largest Plant of the world is of 540 MW and is in US. Plant of 680 MW is going to be commissioned in Tamilnadu, India. Its fifty percent work is done. After it's commissioning India will rise to No.1 place. When it will become 1500 MW India will be far ahead from other countries.'

(C) Biomass Power and Bagasse Co-generation Programme

4.28 Biomass Power and Bagasse Co-generation Programme is being promoted by the Ministry during the year. The Programme aims at efficient utlization of biomass such as agro-residue in the form of stalks, stems and straw; agro-industrial residues such as shells, husks, de-oiled cakes and wood from dedicated energy plantations for power generation. The potential for power generation from agricultural and agro-industrial residues is estimated at about 18,000 MW. With progressive higher steam

temperature and pressure and efficient project configuration in new sugar mills and modernization of existing ones, the potential of surplus power generation through bagasse cogeneration in sugar mills is estimated at 7,000 MW. The potential for biogasse cogeneration lies mainly in the nine sugar producing States, with the maximum potential of about 1250 MW each in the States of Maharashtra and Uttar Pradesh. Thus, the total estimated biomass power potential is about 25,000MW.

4.29 On being asked about the estimated biomass/ bagasse co-generation power potential along with installed capacity in the country, the Ministry furnished:

S. No.	State	Estimated Potential	Installed Capacity
1	Andhra Pradesh	815.75	380.75
2	Bihar	293.42	43.42
3	Chattisgarh	317.00	280.00
4	Gujarat	446.00	56.00
5	Haryana	289.30	45.30
6	Karnataka	1488.00	872.00
7	Madhya Pradesh	198.00	35.00
8	Maharashtra	3035.00	1220.00
9	Odisha	78.00	20.00
10	Punjab	338.00	155.00
11	Tamilnadu	933.00	627.00
12	Uttarakhand	250.00	50.00
13	Uttar Pradesh	4303.00	842.00

4.30 When asked about the physical achievements vis-à-vis targets during the last three years, the Ministry furnished:

Year	Target (MW)	Achievements (MW)
2013-14	400	412
2014-15	400	405
2015-16	400	400

4.31 On a query about the budgetary allocation vis-à-vis utilization for the last three years under grid-interactive Biomass /Bagasse Cogeneration, the Ministry stated:

Year	Allocation (in crores)	Expenditure Incurred (in crores)
2013-14	32.50	31.38
2014-15	25.00	25.00
2015-16	29.00	29 .00

4.32 Regarding physical targets and budgetary allocation for the year 2016-17, the Ministry stated that a physical target of 400 MW has been fixed for 2016-17 with an outlay of Rs. 20 crore.

4.33 When asked about the activities proposed to be undertaken under the programme and as to whether the allocation would be sufficient to achieve the targets, the Ministry stated that extra funds will be demanded at RE stage after reviewing the expenditure plan. The Ministry proposed to undertake the following activities during the year:

- Business meet and awareness Programmes for stakeholders like sugar mills, farmer associations and industry representatives.
- Improve the boiler temperature.
- To employ higher temperature and pressure (107 bar and 550C) boilers in sugar mills.

4.34 On being queried about the provisions of fiscal and financial incentives provided by the Government in biomass/ Bagasse Co-generation power sector, the Ministry stated:

> "Besides the Central Financial Assistance, fiscal incentives such as concessional import duty, excise duty, tax holiday for 10 years, bank loans of up to Rs. 15 crore for biomass-based power generators considered part of PSL etc., are available for Biomass power projects. The benefits of concessional custom duty and excise duty exemption are available on equipment required for initial setting up of biomass projects based on certification by Ministry. In addition, State Electricity Regulatory Commissions have determined preferential tariffs and Renewable Purchase Standards (RPS). Indian Renewable Energy Development Agency (IREDA) provides loan for setting up biomass power and bagasse cogeneration projects.

CHAPTER V

RENEWABLE ENERGY FOR RURAL APPLICATIONS

5.1 The Ministry of New and Renewable Energy has been supporting Programmes for the deployment of renewable energy systems and devices such as biogas plants, photovoltaic systems, biomass gasifiers, solar cookers and solar thermal systems, etc. for rural and semi-rural applications. The Ministry has also been implementing remote village electrification programme and village energy security test projects.

5.2 On being asked about the budgetary allocation (BE/RE) and actual utilization under Renewable Energy for Rural Applications for the last three years, the Ministry furnished:

Table 5.2 BE/RE & Actual Utilization for last three years under renewable energy for rural applications

(Rs.in crore)

	FY 2013-14			**FY 2014-15**			**FY 2015-16**		
	BE	**RE**	**Actual Exp**	**BE**	**RE**	**Actual Exp**	**BE**	**RE**	**Actual Exp (as on 28-03-16)**
RE for Rural applications	**150.00**	**113.29**	**109.21 (96.39%)**	**157.50**	**153.50**	**148.64 (96.39%)**	**160.00**	**109.21**	**97.83 (85.98%)**

5.3 When asked about the physical achievements vis-à-vis targets during the last three years, the Ministry furnished:

Table 5.3 Physical achievement during last three years under renewable energy for rural applications

S. No.	**Programme / system**	**2013-14**		**2014-15**		**2015-16**	
		Target	**Ach**	**Target**	**Ach**	**Target**	**Achievement (upto 29.02.2016)**
1	RVE (No. of Villages & Hamlets)	-	-	250 (Sanctioned)	313	NIL	NIL
2	Biogas (No.	1.1	1.1	1.10	0.83	1.10	0.50

	of Biogas Plants in Lakh)						
3	Improved Cookstoves (No. in lakh)	New Programme		7.50	0.09	3.50	0.03
4	Solar Cookers (No.)	10,000	10,000	25151	-	25000	13,000

5.4 Regarding non-achievement of targets, the Ministry stated:

- Non achievement of Biogas targets was due to high cost of installation of biogas plants and improved supply of LPG of Rural areas.
- Non achievement of improved cook stoves was due to inadequate funds under the programme.

5.5 On being asked about the corrective measures taken by the Government, the Ministry stated:

> As Biogas programme is a rural oriented programme it requires mass publicity and users trainings to the beneficiaries. It is proposed to lay emphasis on publicity and proper users training programme indicating benefits of Biogas during the year 2016-17".

5.6. When asked about the budgetary allocation along with the physical and financial target for various Schemes/Programmes/ under renewable energy for rural applications for the year 2016-17, the Ministry stated:

> "As per Finance Ministry's directions on the rationalization of heads, the head Renewable Energy for Rural Applications has been merged with grid interactive and Distributed Renewable power".

5.7 On a query about the development under Remote Village Electrification Programme, the Ministry stated:

> The Ministry was implementing Remote Village Electrification (RVE) Programme for providing financial support for lighting/basic electricity using renewable energy sources in those unelectrified remote census villages, unelectrified hamlets of electrified census villages where grid connectivity is either not feasible or not cost

effective & not covered under Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY) for grid electrification till the end of 11th Plan period and was discontinued during the 12 Plan period. A proposal for implementation of IInd phase of RVE was moved to Cabinet for implementation of the programme during the 12th Plan period with certain modifications. However, the Cabinet directed that the programme can be implemented within the existing guidelines. Presently no new projects are being approved under the programme. The outlay has been kept for liquidating past liabilities.

Presently, Ministry of Power is implementing Decentralized Distributed Generation (DDG) under Deen Dayal Upadhyaya Gram Jyoti Yojana for village electrification through which electricity access to the un-electrified villages/habitations where grid connectivity is either not feasible or not cost effective. DDG can be from conventional or renewable sources such as biomass, biofuels, biogas, Mini hydro, solar etc. In 12th Plan & 13th Plan, a subsidy of Rs.900 crore has been earmarked for DDG projects. However, the allocation under DDG would be flexible to meet any additional requirements within the overall cost of the scheme.

CHAPTER VI

RENEWABLE ENERGY FOR URBAN, INDUSTRIAL AND COMMERCIAL APPLICATIONS

6.1 The MNRE has reported that they have been promoting the use of technologies for energy recovery from municipal, industrial and commercial wastes and solar energy, for meeting certain niche energy demands for urban, industrial and commercial sectors in the country. The programmes being implemented during the year include: i) Energy Efficient Solar/Green Building Programme; ii) energy Recovery from Urban, Industrial and Agricultural Wastes; and iii) Bioenergy and Cogeneration in Industry.

6.2 On being asked the physical and financial performance under Urban, Industrial and Commercial Applications for the last three years, the Ministry furnished:

Table 6.2 Physical achievements for last three years under Urban, Industrial and Commercial Applications

Waste to Energy

Year	Physical (in MW)		Financial Progress (in Rs. crore)	
	Target	Achievement	BE/RE	Expenditure
2013-14	30	27.65	33.00/10.00	9.99
2014-15	30	21.78	20.50/9.07	9.07
2015-16	20	14.13 (Upto 29.02.2016)		

Biomass (Non-bagasse) co-generation in Industries

Year	Physical (in MW)		Financial Progress (in Rs. crore)	
	Target	Achievement	BE/RE	Achievement
2013-14	60	60.67	5.50/12.88	12.88
2014-15	60	60.05	8.00/6.24	6.24
2015-16	60	60	10/10	9.50

6.3 When asked about the budgetary allocation and physical target and the different schemes and projects to be undertaken under renewable energy for urban industrial and commercial application for the year 2016-176, the Ministry furnished:

> **"**As per Finance Ministry's directions on the rationalization of heads, the head Renewable Energy for Urban, Industrial and Commercial Applications has been merged with grid interactive and Distributed Renewable power. The major schemes to be promoted are Solar Cities, Green Building Programmes and support to State programmes. A Budget outlay of Rs. 20.00 Crore has been kept for these programmes.

6.4 Regarding the physical targets, the Ministry furnished:

Programme	Activity Supported
Solar city programme	• Master plan for 11 Solar Cities • 3 Model Solar Cities to be declared • One Pilot Solar City to be taken up • 65 Green campuses
Green Building	Concept of Green Buildings will be demonstrated which would lead to large-scale replication / promotion of such concepts
Support to States	State Nodal agency will be strengthened including support to Association of Renewable Energy Agencies of the States (***AREAS***).

6.5. When asked about the provisions of fiscal and financial incentives provided by the Government for Renewable Energy for Urban, Industrial and Commercial Applications, the Ministry furnished:

Table 6.5 *Financial Assistance under Renewable Energy for Urban, Industrial and Agricultural Wastes/Residues*

Wastes/Processes/Technologies	Central Financial Assistance
i. Power generation from Municipal Solid Waste	Rs.2.00 crore/ MW (Max. Rs.10crore/project)
ii. Power generation from biogas at Sewage Treatment Plant or through biomethanation of Urban and Agricultural Waste/residues, including cattle dung or production of bio-CNG	Rs. 2.00 crore/MW or bio-CNG from 12000 m^3 biogas/day (Max. Rs. 5 crore/project)
iii. Biogas generation from Urban, Industrial and Agricultural Wastes/residues	Rs. 0.50 crore /MWeq. (12000 m^3 biogas /day with maximum of Rs. 5 cr./ project)
iv. Power Generation from Biogas (engine/gas turbine route) and production of bio-CNG for filling into gas cylinders	Rs. 1.00 crore/MW Or bio-CNG from 12000 m^3 biogas (Max. Rs.5 crore/project
v. Power Generation from Biogas, Solid Industrial, Agricultural Waste/residues excluding bagasse through Boiler + Steam Turbine Configuration	Rs. 0.20 crore/MW (Max. Rs. 1 crore/project)

6.6 The Ministry also provide other incentives and support measures as follows:

i. Incentives to State Nodal Agencies: service charge @ Rs. 1% of the subsidy restricted to Rs. 5.00 lakh per project,

ii. Financial Assistance for promotional activities: for organizing training courses, business meets, seminars/workshops and publicity/awareness, subject to a maximum of Rs. 3.0 lakh per activity.

CHAPTER VII

RESEARCH, DESIGN, DEVELOPMENT AND DEMONSTRATION IN RENEWABLE ENERGY

7.1 According to the MNRE, their Research & Development activities aim at resource assessment, technology development, demonstration and commercialization for promoting the large scale use of new and renewable energy across the country . The Ministry supports Research, Design, Development and Demonstration (RDD&D) to develop new and renewable energy technologies, processes, materials, components, sub-systems, products & services, standards and resource assessment so as to indigenously manufacture renewable energy devices and systems. The underlying purpose of RDD&D efforts is to make industry competitive and renewable energy generation supply self-sustainable/profitable and thereby contribute to increase share in total energy mix in the country.

7.2 On being asked the budgetary allocation and the actual expenditure during the last three years, the Ministry furnished:

Table 7.2 Expenditure during last three years under RDD&D

Rs. in Crore

Year	BE	RE	Expenditure
2013-14	158.00	148.00	136.97
2014-15	149.50	128.00	127.45
2015-16	90.00	106.00	62.46 (as on 28.03.2016)

7.3 When asked the major Programme/Research undertaken and achievements made during the last three years, the Ministry, in a note, stated that the Research, Development and Demonstration (RD&D) is being supported in the field of Solar, biogas, biofuels, Hydrogen Energy and Fuel Cells and wind.

7.4 Regarding R&D activities under solar and biogas, the Ministry stated:

"R&D in solar is being pursued vigorously keeping in view the goals set under the Jawaharlal Nehru National Solar Mission (JNNSM).The RD&D projects taken up during the last three years facilitated strengthening R&D capacity of the R&D institutions, industries, etc. to take up R&D projects for technology development and demonstration with commercial potential in long term. The projects taken up include higher efficiency solar cells, solar thermal power generation, advance research in biomass energy, including development of specifications and standards of biomass energy system, biogas generation for power generation using different feedstock, biofuels, hydrogen energy storage and fuel cells development, etc. As follow up to the JNNSM, the Ministry funded a number of RD&D projects in solar thermal and solar photovoltaic with an aim to develop cost effective and efficient technologies. In solar thermal RD&D projects were taken up for development and demonstration of advanced solar concentrating technologies for power generation.

In Solar photovoltaic (SPV), R&D projects were taken for development of solar cells to achieve improved efficiency with cost reduction. Centre for Excellence weas supported in various institutions for pursuing research for development and testing of materials for solar thermal power generation and development of high efficiency solar cells. In the area of biogas generation, demonstration projects on purification, bottling and utilization for various applications, including biogas based refrigeration were completed.

7.5 Under biofuels, hydrogen energy, fuel cells and wind, the Ministry stated:

"In biofuel, the focus of R&D is commercialization of the technologies for second generation of biofuels i.e. (i) Lignocellulosic ethanol/bio-butanol production; and (ii) green diesel & biomass to liquid(BTL). The Ministry in 2014 took up a “National Biomass Cookstove Programme(NBCP)” after setting up test facilities and bringing out a Standard for Improved Biomass Cookstove which was adopted by BIS in August in 2013. In hydrogen and fuel cells, the focus is on technology development and demonstration for hydrogen production, storage, applications in engines & fuel cells, and development of fuel cell technologies.

In wind, the efforts were directed towards resources assessment, development of wind generators and hybrid systems, power systems, testing and monitoring of wind electric systems".

7.6 Highlighting their performance under R&D sector, the Ministry stated:

"In August, 2014, MNRE organized a ‘R&D Conclave on New & Renewable Energy’, wherein were presented the progress of on-going R&D projects sanctioned by the Ministry by the Principal Investigators of the respective

projects. Participants included researchers, experts, industry representatives and policy makers & senior officers from the respective Govt. Departments. The event was inaugurated by the Hon'ble Minister (NRE) and was addressed by dignitaries from the related Govt. Departments"

7.7 The Ministry also stated that for faster development of technologies in R&D sector, the MNRE renamed its institutions, namely Solar Energy Centre, Gwalpahari and Centre for Wind Energy Technology (CWET), Chennai as National Institute of Solar Energy (NISE) and National Institute of Wind Energy(NIWE), respectively, as an attempt to engage these institutions in R&D and Demonstration in addition to testing of solar and wind energy systems for faster development of technologies in these areas. A coordinated approach is being followed for collaboration among institutions and industries to achieve the goal of technology development.

7.8 When asked about the budgetary allocation for the year 2016-17, the Ministry stated:

*"*Total budget for Research, Development and International cooperation and Autonomous bodies during the year 2016-17 is Rs 498.00 crore, which includes Rs. 53.00 crore for MNRE Institutions, namely, National Institute of Solar Energy (NISE), Gurgaon, National Institute of Wind Energy, Chennai and National Institute of Renewable Energy, Kapurthala".

7.9 When the Committee desired to know about the thrust areas identified for R&D support under the new and renewable energy sector for the year 2016-17, the Ministry informed:

"Funding of RD&D Programme is done following the MNRE's comprehensive policy and guidelines of MNRE for the same. However, in the case of JNNSM, thrust areas have been drawn keeping in view the objectives of JNNSM, which include development of materials and technologies for power generation to achieve grid parity by 2022. The focus of RD&D efforts continues on development of materials and technologies to achieve highrer efficiency and cost effectiveness. In hydrogen and fuel cells, the focus is on technology development and demonstration hydrogen production, storage, applications in engines & fuel cells, and development of fuel cell technologies. In biofuel, the focus of RD&D

efforts is on development of technologies and processes for biofuel production. In wind, the efforts would continue on resource assessment, development of wind generators and wind-solar hybrid systems, control systems and monitoring".

7.10 On a query about the technological advancements available to support the various renewable energy industry so as to make the installations economical and user friendly, the Ministry stated:

RD&D efforts in solar thermal power generated knowledge for design, development, testing and commissioning of projects. The efforts will continue for performance evaluation to improve the scalability and bankability of such projects. In solar cells, considerable achievements have been made in strengthening R&D capabilities of R& D institutions/industries in developing higher efficiency solar cells. These projects have encouraged industries for participation in technology development in the areas on cost sharing basis. The R&D efforts in biomass gasification and biomass cookstoves have resulted into development of draft standard for gasifiers and development of standards and test protocols for improved biomass cookstoves. Demonstration projects in biogas generation, purification and bottling were also taken up with complete technology package. In the area of hydrogen energy, some RD&D projects have been supported by the Ministry, where industry has also been participating either with academic institutions as industry partner or on its own. These projects are related to:

(i) Modification of engines for operation with hydrogen blended CNG as fuel in 7 vehicles;

(ii) Development and demonstration of dual fuel vehicle with hydrogen and diesel as fuels;

(iii) Development of hydrogen fuelled engine for vehicle; and

(iv) Setting up of hydrogen refueling facility. Industry has also developed fuel cell buses. These are the initial prototypes of hydrogen energy based vehicles.

(v) In wind, 100 dedicated wind monitoring stations have been commissioned in the country at different heights ranging from 50m to 120m.

Part –II

Observations/Recommendations of the Committee

Performance of Twelfth Five Year Plan

The Committee find that the budgetary allocation for the entire 12th Plan is Rs.19113 crore, against which an amount of Rs.9653.91 crore has been actually allocated during the first four years of the Plan period. Hence, Rs.9459.09 crore, i.e 49 percent of the Plan allocation is still left for utilization in the terminal year of the Plan. The total actual expenditure of the first four years of the Plan period, as on 28th March, 2016, was Rs. 9326.01 crore which accounts for only 49 percent of the GBS allocation for the 12th Plan. As four years of the Plan period are over, the Ministry were expected to utilize at least 80 percent or a major portion of the total budget allocated for the 12th Plan. On the physical performance, against the physical target of 29800 MW grid power capacity for the 12th Plan, 14993.11 MW power capacity has been achieved, which is 50 percent of the Plan target. The Committee note the Ministry's ambitious target of 1,75,000 MW capacity of renewable power by 2022. In view of the foregoing:

i) **The Committee would like the Ministry to revisit their policies and programmes under various renewable energy resources;**

ii) **The Committee recommend that the Ministry should make a serious effort for achievement of the physical targets of the 12th Plan with maximum utilization of allocated funds for the 12th Plan, so that the cascading effect of the 12th Plan will not spill over to the next Plan.**

Demands for Grants of MNRE for 2016-17

2. The Committee find that the Plan Outlay of Rs.6160.73 crore (BE) during the year 2015-16 was enhanced to Rs.9648.78 crore at the RE stage. This is due to the enhanced support from the National Clean Energy Fund (NCEF) from Rs.2500 crore to Rs. 4000 crore and Internal and Extra Budgetary Resources (IEBR) from Rs.3373.06 crore to Rs. 5402.55 crore. The Committee observe that during the last three years, the Plan Outlay of the Ministry has been enhanced at RE stage, which indicates the commitment of the Government towards implementing renewable energy programmes. The Committee appreciate the Ministry's effort to mobilize supplementary Demands for Grants at the RE stage. Although the whole amount of allocation at the RE not has been fully spent during the last three years, the Committee find that during the year 2015-16, an amount of Rs.10474.24 crore could be spent which is more than the RE of Rs.9648.78 crore. For the year 2016-17, the Committee note that the Ministry had sought Rs.9115.40 crore as Plan Outlay (excluding IEBR). However, against this, an amount of Rs.5000 crore (BE) was allocated as support from NCEF. The Committee also note that there is an increase of Rs.753 crore, i.e 17.75 percent, in the budgetary support for the year 2016-17 over the Revised Estimates of the previous year's support of Rs.4246.23 crore. The Committee are informed that additional funds will be required for achieving the higher targets set for renewable energy sector. As the allocated amount (Rs.5000 crore) is much lower than the projected amount (Rs.9115.40 crore), the Committee are apprehensive that unless additional allocation is made, implementation of various programmes of the Ministry will be seriously affected. The Committee observe that for the year 2016-17, the Ministry are projecting Internal and

Extra Budgetary Resources (IEBR) to the tune of Rs. 9118.85 crore. The Committee trust that the Ministry will make all-out efforts additional funds from IEBR to meet the additional requirement of funds. **The Committee, therefore, recommend that :**

i) **Additional Gross Budgetary Support may be provided to the Ministry as supplemetary Demands for Grants at the RE stage;**

ii) **The Ministry of New and Renewable Energy should make concerted efforts to mobilize additional funds from Internal and Extra Budgetary Resources (IEBR), the National Clean Energy Fund (NCEF) and other renewable energy development fund so as to achieve the targets set for the current financial year under various programmes of the renewable energy sector.**

Wind Energy

3 . The Committee note that wind power potential in the country at the height of 100 metre has been estimated to be more than 3,00,000 MW. Against this, a total capacity of 25188 MW has been reportedly installed as on January, 2016. The Committee note a fluctuating performance during the last three years, viz. in 2013-14 and 2014-15, against the targets of 2500 MW and 2000 MW, wind energy capacities of 2079 MW and 2312 MW, respectively, have been achieved. However, the performance in 2015-16 is quite discouraging, i.e. against a target of 2400 MW, only 1744.78 MW capacity has been installed (as on January, 2016). The budget allocated in each of the three years has been reportedly fully utilized. For the year 2016-17, the Committee are informed that a physical target of 4100 has been set with a budgetary allocation of Rs.365 crore. When the Ministry could not achieve a physical target of 2400 MW with an allocation of

Rs. 314 crore in 2015-16, the Committee are apprehensive about achievement of the enhanced target with the current allocation. The Committee also note that the fiscal and financial incentives available include concessional custom duty and special additional duty, excise duty exemptions, income tax holiday, Accelerated Depreciation (AD) and Generation Based Incentive (GBI) for those who do not avail AD benefit. **The Committee, therefore, recommend that:**

i) **The Ministry may approach the Ministry of Finance to allocate more funds at the time of Revised Estimates so as to ensure that implementation of the wind energy projects does not suffer due to shortage of funds.**

ii) **The Ministry should spare no efforts to achieve the physical target of 4100 MW wind energy capacity for the year 2016-17.**

iii) **The Ministry should also give due publicity to the fiscal and financial incentives available to the industry.**

4. The Committee understand that the major activities to be undertaken by the Ministy under the wind energy programme for the year 2016-17 include finalization of repowering policy, finalization of wind-solar hybrid policy, finalization of the National Wind Energy Mission, etc. The Committee welcome the initiatives taken in the wind-solar hybrid which they feel is the need of the hour. In view of the much talked about global warming and El Nino which are going to have impact the river water system and the oceans, the Committee feel that the only way out is to utilize the wind capacity as well as solar energy. The Committee are also concerned about the delay in the

finalization of the National Wind Energy Mission. **The Committee therefore, recommend that:**

i) **The Ministry may prepare a roadmap for the hybrid system to make optimum use of solar and wind energy for generation of electricity.**

ii) **A pilot project on wind-solar hybrid system may be initiated on priority basis.**

iii) **The Committee may be apprised of the progress regarding finalization of the repowering policy, the National Wind Energy Mission and the wind-solar hybrid policy.**

Solar Energy

5. The Committee observe that the target under the Jawaharlal Nehru National Solar Mission has been revised from 20,000 MW to 1,00,000 MW to be achieved by 2022. Against the estimated potential of 7,50,000 MW solar energy in the country, 6104.3 MW solar energy capacity has been commissioned/installed as on 14th March, 2016. As such, the Ministry has a huge task before them to achieve 93896 MW solar energy capacity to meet the ambitious target of 1,00,000 MW solar energy capacity by 2022. The Committee note that the Ministry has drawn up a detailed stategic plan to achieve the specified targets under the Mission. For the year 2016-17, a physical target of 12,000 MW for Grid-interactive solar power has been set with an outlay of Rs.2350 crore. The Committee are informed that the budget allocated will be less to achieve the specified target set for 2016-17. The Committee are apprehensive that implementation of the solar energy projects in the country may be adversely affected due to the dearth of funds. **The Committee, therefore, recommend that:**

i) **The Ministry may make sustained efforts to initiate projects through various schemes of the Union Government and State Governments, so as to achieve the target of 12000 MW set for the year 2016-17.**

ii) **The Ministry should play a proactive role in monitoring the progress of various solar energy projects.**

iii) **The Ministry should also ensure that implementation of the solar energy projects is not affected due to lack of adequate finacial resources.**

Biomass and Bagasse Co-generation Power

6. The Committee find that the estimated potential for power generation from Biomass/Bagasse Co-generation in the country is around 12754 MW. Against this, a cumulative capacity of 4626 MW has been reportedly installed. The Committee also find the performance in this sector during the last three years to be quite satisfactory. The physical targets in all the three years could be achieved with full utilization of the funds allocated. Against a physical target of 400 MW each in the last three years, achievement was 412 MW, 405 MW and 400 MW, respectively. The fund allocated was Rs.32.50 crore, Rs.25 crore and Rs.29 crore, respectively. For the year 2016-17, a physical target of 400 MW has been fixed with an outlay of Rs.20 crore, which is much lower than the previous year's allocation. That being so, the Committee are concerned about achievement of target with the reduced allocation. The Committee note that beisdes the Central Financial Assistance, fiscal incentives such as concessional import duty, excise duty, tax holiday for 10 years, bank loans up to Rs. 15 crore for biomass-based power generators, etc., are available for Biomass power projects and that the

benefits of concessional custom duty and excise duty exemption are also available on equipment required for the initial setting up of biomass projects. **Hence, the Committee recommend that:**

i) **The Ministry may pursue with the Ministry of Finance for additional funds at the RE stage, so as to ensure achievement of the physical target for the year 2016-17.**

ii) **More projects on Biomass/Bagasse Co-generation should be encouraged, especially in those States with potential like Karnataka, Maharashtra and Uttar Pradesh.**

iii) **Proper internal check system be put in place to check non transparency in biomass energy projects of Sugar Mills.**

iv) **Promotional and awareness programmes for stakeholders like sugar mills, farmer associations and industry representatives may be intensively organized.**

v) **The Ministry may also undertake adequate publicity for the fiscal incentives and other benefits available to the industry.**

vi) **The technologies used in the sector may be upgraded and improved, keeping in mind the cost effectiveness.**

Biogas

7. The Committee note that the Ministry has been supporting programmes for the deployment of renewable energy systems and devices such as biogas plants, photovoltaic systems, biomass gasifiers, solar cookers and solar thermal systems, remote village electrification programme and village energy security test projects.

A scrutiny of the data provided for the last three years reveals that the budgetary allocation has been reduced at RE stages and the actual expenditure is much lesser. Further, the physical achievement is very discouraging. Except in the year 2013-14, none of the targets has been achieved. Regarding non-achievement of biogas targets, the Committee are informed that it was due to the high cost of installation of biogas plants and improved supply of LPG of rural areas. The Committee note that for the year 2016-17, Rs.142 crore has been allocated for biogas programme with a physical target for deployment of 1 lakh biogas plants. In view of the present status, the Committee are doubtful about the successful implementation of the biogas programme and apprehend that investment in the sector could be a waste of valuable resources. ,

The Committee, therefore, recommend that:

i) **The Ministry may critically review and evaluate the implementation of the biogas programme in the rural areas in terms of their feasibility, affordability and availability of the technology, so as to ensure the investment in the sector does not go in vain.**

ii) **The Ministry may also ensure that the operational system of the already installed biogas plants are functioining well and also as per plans.**

Renewable Energy for Urban, Industrial and Commercial Applications

8. The Committee note that the MNRE has been promoting the use of technologies for energy recovery from municipal, industrial and commercial wastes and solar energy under renewable energy for urban, industrial and commercial applications. The other programmes include i) energy efficient solar/green building programme; ii) energy

recovery from urrban, industrial and agricultural wastes; and iii) bioenergy and cogeneration in Industry. On scrutiny of the data under the waste to energy programme, the Committee find that the targets during the last three years were never achieved, i.e. against a target of 30 MW each in 2013-14 and 2014-15, a capacity addition of 27.85 MW and 21.78 MW, respectively could be achieved. During 2015-16, against a target of 20 MW, only 14.13 MW could be achieved (as on 29.02.2016). In the financial front, although the entire amount of RE were spent, there was a consecutive reduction of budget both at the BE and the RE stages. The BE of Rs.33 crore in 2013-14 and Rs.20.50 crore in 2014-15 has been reduced to Rs.10 crore and Rs.9.07 crore, respectively, at RE stage. There was no allocation of fund during the year 2015-16. The Committee have been apprised that the activities and management of municipal solid waste to energy are now under the Ministry of Urban Development and that industrial waste is managed by the MNRE. The Committee are concerned about the allocation of the municipal solid waste to energy management programme to a less experienced Ministry, as they feel that the MNRE being the nodal Ministry of the Government of India for all matters relating to new and renewable energy would be more capable in handling such projects. The Committee desire that the MNRE should play a proactive role in supplementing the programmes under the waste to energy. The Committee note that for the year 2016-17, the major schemes of the Ministry include promotion of solar cities, green building programmes and support to State programmes with and outlay of Rs. 20.00 crore.

i) In view of the importance of the solid waste to energy programme, the Committee recommend that there should be an integrated

strategy in managing the entire activities under the waste to energy programme.

ii) **In view of rapid urbanization, resulting in extensive construction activities, the Committee urge the Ministry to give due importance to the activities under energy efficient solar/green building programme, to facilitate promotion and development of solar cities and green buildings.**

iii) **The Committee also recommend enhanced publicity of the financial assistance available under this sector.**

Research, Design, Demonstration and Development in New and Renewable Energy (RDD&D)

9. The Committee note that the allocation under RDD&D for the years 2013-14 and 2014-15 was reduced at the RE stage i.e. in 2013-14 BE of Rs.158 crore was reduced to 148 at RE and in 2014-15 BE was Rs. 149.50 croe and RE was Rs.128 crore. However, it is found that even the reduced amount could not be fully spent. However, the Committe are happy to note that during 2015-16, although a lesser amount was allocated at the BE stage (Rs.90 crore), it has been enhanced at RE stage (Rs.106 crore). Nonetheless, the actual expenditure as on 28.03.2016 was only Rs.62.46 crore which is only 59 percent of the R.E. Regarding the activities during the last three years, the Committee are informed that RD&D is being supported in the field of solar, biogas, biofuels, Hydrogen Energy and fuel cells and wind. For the year 2016-17, the Committee note that an outlay of Rs 498.00 crore has been allocated under RDD&D which includes Rs. 53 crore for MNRE Institutions, namely, the National Institute of Solar Energy (NISE), Gurgaon, the National Institute of Wind Energy, Chennai and the National Institute of Renewable Energy, Kapurthala. The Committee appreciate the

enhanced allocation for the current financial year. However, keeping in view the previous year's financial performance, they are apprenhensive about the optimal utilization of the fund during 2016-17 as well. The Committee also note that for faster development of technologies in the R&D sector, the MNRE have renamed the technological institutions. While the motive in renaming the institution is laudable, the Committee feel that outputs are more important for which the Ministry should endeavor.

The Committee, therefore recommend that:

i) **The Ministry may ensure a coordinated approach for successful collaboration among the technological institutions and industries to achieve the goal of renewable energy technology development.**

ii) **The Ministry should concentrate on development of materials and technologies which are most efficient and cost effective. Simultaneously constant and close monitoring of all the R&D projects should be ensured with a view to evaluating their functioning in a result-oriented manner.**

iii) **The Ministry should focus on full utilization of the allocated funds, so that more funds may be sought at the RE stage.**

10. The Committee note that the primary objective of the Research and Development activities is resource assessment, technology development, demonstration and commercialisation for promoting large scale use of new and renewable energy. For manufacturing indigenous renewable energy devices and systems, new and renewable energy technologies, processes, materials, sub-systems, production devices and standards are to be supported and upgraded. The basic purpose of RDD&D is to make this sector competitive and renewable energy generation/supply profitable/self-

sustainable. The Committee are of the condidered view that the area of research, design and development in the renewable energy sector has not been given the required attention. Other areas of support in research, development and demonstration are solar, biogas, bio-fuel, hydrogen energy, fuel cells and wind. If due thrust is given to these areas with sufficient funds and talent, the sector can be revolutionised. **The Committee, therefore, recommend that:**

i) **Due attention should be paid to research, design, development and demonstration in the renewable energy sector with the backing of sufficient funds and talent.**

ii) **The objective of these activities should be to tap the huge potential in the areas of wind, solar and other renewable energy sources.**

iii) **The industry should become competitive with the indigenous manufacturing of renewable energy devices and systems.**

NEW DELHI
April, 2016
Vaisakha , 1938 (Saka)

DR. KIRIT SOMAIYA,
Chairperson,
Standing Committee on Energy

Annexure –I

(Vide Para No.2.1 of the Report)

12th Plan – Programme-wise Physical Targets and Financial allocaion:

Sr. No.	Programme	Physical Target	Financial Outlay
I-GRID-INTRACTIVE AND DISTRIBUTED RENEWABLE			**(Rs. in Crore)**
(A)	**Grid-interactive**		
1	Wind Power	15,000 MW	5,800
2	Small Hydro Power	2,100 MW	750
3	Solar Power	10,000 MW	2,000
4	Biomass Power (Combustion Gasification & Bagasse Cogeneration)	2,200 MW	350
5	Urban & Industrial Waste to Energy	300 MW	300
6	Transmission Infrastructure		50
	Sub-total (A)	**29,600 MW**	**9,250**
(B)	**Off-Grid/DRPS**		
1	Solar applications	1,000 MWeq	4,000
2	Energy from Urban/Muncipal/Industrial Wastes	200 MW	75
3	Non Bagasse Cogeneration in Industry	2,000 MWeq	175
4	Biomass Gasifiers	55 MWeq	60
5	Bio-gas based energy	50 MWeq	40
6	Micro hydel& Watermills	25 MW	40
7	Aero-generators/Hybrid systems	10 MW	50
	Sub-Total (B)	**3,340 Mweq**	**4,440**
	I-Total (A) + (B)		**13,690**
II-RENEWABLE ENERGY FOR RURAL APPLICATIONS			
1	RVE Programme / Energy Access	Depends on proposal from the States	1000
2	Family type biogas plants	5.75 lakh	650
3	Other Biogas applications		10
4	Cook Stove (lakh)	27.50 lakh	300
5	Solar Cookers (lakh)		130
6	Energy Plantations		25
	II-Total		**2115**
III-RENEWABLE ENERGY FOR URBAN, INDUSTRIAL & COMMERCIAL			
1	Solar Thermal Systems	8 million sq meter(including cooker)	600
2	Green buildings		10
3	Solar Cities/pilot/related activities		100
4	Alternate fuel vehicles (lakh)		90
	III-Total		**800**
IV-RESEARCH, DESIGN & DEVELOPMENT IN RENEWABLE ENERGY			
1	Bio-Energy		
	Bio-fuel		40

	Biogas		20
	Biomass Gasification		5
	Waste-to-Energy		5
	Cookstoves		10
2	Solar Energy		330
3	Small Hydro Power		35
4	New Technology		
	Hydrogen Energy & HEFC		80
	Fuel Cells		60
	Tidal Energy		15
	Geo Thermal		30
	Battery Operated Vehicles		10
5	Solar Energy Centre (SEC)/NISE		120
6	C-WET		100
7	NIRE		50
	IV-Total		**910**
V-SUPPORT PROGRAMMES			
1	Information and Publicity programmes (incl.SADP)		145
2	International Relations		20
3	HRD & Training		120
4	Monitoring & Evaluation		6
5	Plan Secretariat (Administration)		120
6	IREDA Equity		300
7	Outstanding liabilities of 11th plan RVE,VESP & other		30
8	e-governance		7
9	Support to SNA		50
10	Solar Energy Corporation		600
11	National Renewable Energy/ Bio energy Corporation		150
	V-Total		**1548**
	Total		**19,063**
	Externally Aided Projects (EAP)		**50**
	TOTAL		**19,113**

Annexure-II

(*(Vide Para No.3.3 of the Report)*

Details of the Budget Estimates for the year 2016-17 vis-à-vis BE/RE of 2015[16 and Actuals of 2014-15

DEMAND NO.61

A. The Budget allocations, net of recoveries and receipts, are given below:

(In crores of Rupees)

Sr. No.	Group/Sub Group/Sub Sub Group/Scheme/Sub Scheme/Programme/Sub Programme	Major Head	Actual 2015			Budget 2015-2016			Revised 2015-2016			Budget 2016-2017		
			Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
		Revenue	282.89	12.96	295.85	846.00	15.39	861.39	446.00	13.89	459.89	192.67	15.54	208.21
		Capital	*99.34*	*0.00*	*99.34*	*95.00*	*0.00*	*95.00*	*95.00*	*0.00*	*95.00*	*95.00*	*0.00*	*95.00*
		Total	**382.23**	**12.96**	**395.19**	**941.00**	**15.39**	**956.39**	**541.00**	**13.89**	**554.89**	**287.67**	**15.54**	**303.21**
1.	Secretariat-Economic Services	3451	16.46	12.31	28.77	23.00	14.14	37.14	23.00	12.87	35.87	10.47	14.06	24.53
	New and Renewable Energy													
2.	*Grid Interactive and Distributed Renewable Power*													
2.01	Grid Interactive and Distributed Renewable Power	2810	1132.68	0.00	1132.68	1949.00	0.00	1949.00	1800.00	0.00	1800.00	2410.00	0.00	2410.00
2.02	Less - Amount met from National Clean Energy Fund	2810	-1091.84	0.00	-1091.84	-1487.50	0.00	-1487.50	-1685.00	0.00	-1685.00	-2410.00	0.00	-2410.00
	Net		*40.84*	*0.00*	*40.84*	*461.50*	*0.00*	*461.50*	*115.00*	*0.00*	*115.00*	*0.00*	*0.00*	*0.00*
3.	Renewable Energy for Rural Applications	2810	88.05	0.00	88.05	97.50	0.00	97.50	97.50	0.00	97.50	90.00	0.00	90.00
		3601	21.18	0.00	21.18	35.00	0.00	35.00	35.00	0.00	35.00	41.00	0.00	41.00
		Total	*109.23*	*0.00*	*109.23*	*132.50*	*0.00*	*132.50*	*132.50*	*0.00*	*132.50*	*131.00*	*0.00*	*131.00*
4.	Renewable Energy for Urban,	2810	10.00	0.00	10.00	14.00	0.00	14.00	14.00	0.00	14.00	4.62	0.00	4.62

	Industrial and Commercial Applications													
5.	*Research, Design & Development in Renewable Energy*													
5.01	Research, Design & Development in Renewable Energy													
5.01.01	Research, Design & Development in Renewable Energy	2810	118.93	0.00	118.93	149.50	0.00	149.50	128.00	0.00	128.00	90.00	0.00	90.00
5.01.02	Less - Amount met from National Clean Energy Fund	2810	-25.94	0.00	-25.94	-90.50	0.00	-90.50	-69.00	0.00	-69.00	-90.00	0.00	-90.00
	Net		92.99	0.00	92.99	59.00	0.00	59.00	59.00	0.00	59.00	0.00	0.00	0.00
5.02	Research, Design & Development in Renewable Energy	4810	18.34	0.00	18.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total-Research, Design & Development in Renewable Energy		*111.33*	*0.00*	*111.33*	*59.00*	*0.00*	*59.00*	*59.00*	*0.00*	*59.00*	*0.00*	*0.00*	*0.00*
6.	*Supporting Programmes*													
6.01	External Support(EAP)	2810	6.30	0.00	6.30	8.00	0.00	8.00	8.00	0.00	8.00	2.87	0.00	2.87
6.02	Domestic Support	2810	24.63	0.65	25.28	54.00	1.25	55.25	52.50	1.02	53.52	14.71	1.48	16.19
6.03	Less - amount met from National Clean Energy Fund	2810	-1.00	0.00	-1.00	0.00	0.00	0.00	-24.00	0.00	-24.00	0.00	0.00	0.00
	Net		*29.93*	*0.65*	*30.58*	*62.00*	*1.25*	*63.25*	*36.50*	*1.02*	*37.52*	*17.58*	*1.48*	*19.06*
7.	Other Expenditure	2810	2.99	0.00	2.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		3601	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total	*2.99*	*0.00*	*2.99*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
8.	*Investment in Public Enterprises*													
8.01	Investment in Public Enterprises	4810	181.00	0.00	181.00	95.00	0.00	95.00	295.00	0.00	295.00	95.00	0.00	95.00
8.02	Less - Amount met from Clean Energy	4810	-100.00	0.00	-100.00	0.00	0.00	0.00	-200.00	0.00	-200.00	0.00	0.00	0.00

	Fund													
	Net		*81.00*	*0.00*	*81.00*	*95.00*	*0.00*	*95.00*	*95.00*	*0.00*	*95.00*	*95.00*	*0.00*	*95.00*
	Total-New and Renewable Energy		**385.32**	**0.65**	**385.97**	**824.00**	**1.25**	**825.25**	**452.00**	**1.02**	**453.02**	**248.20**	**1.48**	**249.68**
9.	*Lumpsum Provision for N.E.Region & Sikkim*													
9.01	Lumpsum Provision for N.E.Region & Sikkim	2552	0.00	0.00	0.00	94.00	0.00	94.00	66.00	0.00	66.00	29.00	0.00	29.00
9.02	Less - Amount met from Clean Energy Fund	2552	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Net		*0.00*	*0.00*	*0.00*	*94.00*	*0.00*	*94.00*	*66.00*	*0.00*	*66.00*	*29.00*	*0.00*	*29.00*
10.	Actual Recoveries	2810	-19.55	0.00	-19.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grand Total		***382.23***	***12.96***	***395.19***	***941.00***	***15.39***	***956.39***	***541.00***	***13.89***	***554.89***	***287.67***	***15.54***	***303.21***
B. Investment in Public Enterprises		**Head of Development**	**Budget Support**	**IEBR**	**Total**	**Budget Support**	**IEBR**	**Total**	**Budget Support**	**IEBR**	**Total**	**Budget Support**	**IEBR**	Total
8.01	Indian Renewable Energy Development Agency	12810	145.00	1463.78	1608.78	40.00	3000.00	3040.00	240.00	3346.58	3586.58	20.00	3373.06	3393.06
8.02	Solar Energy Corporation of India	12810	36.00	0.00	36.00	55.00	0.00	55.00	55.00	0.00	55.00	75.00	0.00	75.00
	Total-		***181.00***	***1463.78***	***1644.78***	***95.00***	***3000.00***	***3095.00***	***295.00***	***3346.58***	***3641.58***	***95.00***	***3373.06***	***3468.06***
C.Plan Outlay*														
1	New and Renewable Energy	12810	383.04	1463.78	1846.82	847.00	3000.00	3847.00	475.00	3346.58	3821.58	258.67	3373.06	3631.73
2	North Eastern Areas	22552	0.00	0.00	0.00	94.00	0.00	94.00	66.00	0.00	66.00	29.00	0.00	29.00
Total			**383.04**	**1463.78**	**1846.82**	**941.00**	**3000.00**	**3941.00**	**541.00**	**3346.58**	**3887.58**	**287.67**	**3373.06**	**3660.73**
**Inclusive of works outlay in the Ministry of Urban Development*														
Demand No. 105		12810	0.81	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending - SBE														
Starting - Part B1														
B1. Investment in Public Enterprises-Details of Budgetary Support and IEBR		**Head of Development**	**Year**	**Budgetary Support**			**IEBR**							
				Equity	**Loan**	**Total**	**IR**	**Bonds/ Deb.**	**ECB/Sup.**	**Others**	**Total**			
8.01	Indian Renewable	12810	Act 2013-	145.00	0.00	145.00	1041.33	0.00	416.35	6.10	1463.78			

	Energy Development Agency		2014											
			BE 2014-2015	40.00	0.00	40.00	1200.00	1000.00	800.00	0.00	3000.00			
			RE 2014-2015	240.00	0.00	240.00	1408.58	700.00	1238.00	0.00	3346.58			
			BE 2015-2016	20.00	0.00	20.00	1829.06	0.00	1544.00	0.00	3373.06			
8.02	Solar Energy Corporation of India	12810	Act 2013-2014	36.00	0.00	36.00	0.00	0.00	0.00	0.00	0.00			
			BE 2014-2015	55.00	0.00	55.00	0.00	0.00	0.00	0.00	0.00			
			RE 2014-2015	55.00	0.00	55.00	0.00	0.00	0.00	0.00	0.00			
			BE 2015-2016	75.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00			
	Total-		**Act 2013-2014**	**181.00**	**0.00**	**181.00**	**1041.33**	**0.00**	**416.35**	**6.10**	**1463.78**			
			BE 2014-2015	**95.00**	**0.00**	**95.00**	**1200.00**	**1000.00**	**800.00**	**0.00**	**3000.00**			
			RE 2014-2015	**295.00**	**0.00**	**295.00**	**1408.58**	**700.00**	**1238.00**	**0.00**	**3346.58**			
			BE 2015-2016	**95.00**	**0.00**	**95.00**	**1829.06**	**0.00**	**1544.00**	**0.00**	**3373.06**			
Ending - Part B1														
E. State and UT Plan Schemes														
		Major Head	**Actual 2013-2014**			**Budget 2014-2015**			**Revised 2014-2015**			**Budget 2015-2016**		
			Revenue	**Cap./ Loan**	**Total**	**Revenue**	**Cap./ Loan**	**Total**	**Revenue**	**Cap./ Loan**	**Total**	**Revenue**	**Cap./ Loan**	**Total**
No State/UT Plan Schemes in Demand No 69														
Ending - Part E (State and UT Plan Schemes)														
		Major Head	**Actual 2013-2014**			**Budget 2014-2015**			**Revised 2014-2015**			**Budget 2015-2016**		
			Plan	**Non-Plan**	**Total**	**Plan**	**Non-Plan**	**Total**	**Plan**	**Non-Plan**	**Total**	**Plan**	**Non-Plan**	**Total**
Starting - Part D (Major Head-wise Totals)														
		2552	0.00	0.00	0.00	94.00	0.00	94.00	66.00	0.00	66.00	29.00	0.00	29.00
		2810	245.25	0.65	245.90	694.00	1.25	695.25	322.00	1.02	323.02	112.20	1.48	113.68

		3451	16.46	12.31	28.77	23.00	14.14	37.14	23.00	12.87	35.87	10.47	14.06	24.53
		3601	21.18	0.00	21.18	35.00	0.00	35.00	35.00	0.00	35.00	41.00	0.00	41.00
		4810	99.34	0.00	99.34	95.00	0.00	95.00	95.00	0.00	95.00	95.00	0.00	95.00
		Total	**382.23**	**12.96**	**395.19**	**941.00**	**15.39**	**956.39**	**541.00**	**13.89**	**554.89**	**287.67**	**15.54**	**303.21**
Ending - Part D (Major Head-wise Totals)														
Starting - Part F (Recoveries)														
		2552	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		2810	0.00	0.00	0.00	-1578.00	0.00	-1578.00	-1778.00	0.00	-1778.00	-2500.00	0.00	-2500.00
		4810	0.00	0.00	0.00	0.00	0.00	0.00	-200.00	0.00	-200.00	0.00	0.00	0.00
			0.00	**0.00**	**0.00**	**-1578.00**	**0.00**	**-1578.00**	**-1978.00**	**0.00**	**-1978.00**	**-2500.00**	**0.00**	**-2500.00**
Ending - Part F (Recoveries)														
Starting - Part G (Charged Expenditure)														
No Charged Expenditure in Demand No 69														
Ending - Part G (Charged Expenditure)														
Starting - Part H (Receipts)														
No Receipts in Demand No 69														
Ending - Part H (Receipts)														
Starting - Part I (Gross Expenditure)														
		2552	0.00	0.00	0.00	94.00	0.00	94.00	66.00	0.00	66.00	29.00	0.00	29.00
		2810	245.25	0.65	245.90	2272.00	1.25	2273.25	2100.00	1.02	2101.02	2612.20	1.48	2613.68
		3451	16.46	12.31	28.77	23.00	14.14	37.14	23.00	12.87	35.87	10.47	14.06	24.53
		3601	21.18	0.00	21.18	35.00	0.00	35.00	35.00	0.00	35.00	41.00	0.00	41.00
		4810	99.34	0.00	99.34	95.00	0.00	95.00	295.00	0.00	295.00	95.00	0.00	95.00
			382.23	**12.96**	**395.19**	**2519.00**	**15.39**	**2534.39**	**2519.00**	**13.89**	**2532.89**	**2787.67**	**15.54**	**2803.21**
Ending - Part I (Gross Expenditure)														
Starting - Part SP (Special Statements)														
No Special Statements in Demand No 69														
Ending - Part SP (Special Statements)														
								2015-2016 Demands For Grants						
								DEMAND NO.69						

MINISTRY OF NEW AND RENEWABLE ENERGY

I. Estimates of the amount required in the year ending 31st March,2016 to defray charges in respect of MINISTRY OF NEW AND RENEWABLE ENERGY

	Revenue	Capital	Total
Charged	*0.00*	*0.00*	*0.00*
Voted	2708.21	95.00	2803.21

(In crores of Rupees)

II. The Heads under which this Grant will be accounted for on behalf of the MINISTRY OF NEW AND RENEWABLE ENERGY.

	Major Head	Budget 2014-2015			Revised 2014-2015			Budget 2015-2016		
		Plan	**Non-Plan**	**Total**	**Plan**	**Non-Plan**	**Total**	**Plan**	**Non-Plan**	**Total**
REVENUE SECTION										
Secretariat-Economic Services	3451	23.00	14.14	37.14	23.00	12.87	35.87	10.47	14.06	24.53
North Eastern Areas	2552	94.00	0.00	94.00	66.00	0.00	66.00	29.00	0.00	29.00
New and Renewable Energy	2810	2272.00	1.25	2273.25	2100.00	1.02	2101.02	2612.20	1.48	2613.68
Grants-in-aid to State Governments	3601	35.00	0.00	35.00	35.00	0.00	35.00	41.00	0.00	41.00
Total-Revenue Section		**2424.00**	**15.39**	**2439.39**	**2224.00**	**13.89**	**2237.89**	**2692.67**	**15.54**	**2708.21**
CAPITAL SECTION										
Capital Outlay on New and Renewable Energy	4810	95.00	0.00	95.00	295.00	0.00	295.00	95.00	0.00	95.00
Total-Capital Section		**95.00**	**0.00**	**95.00**	**295.00**	**0.00**	**295.00**	**95.00**	**0.00**	**95.00**
GRAND TOTAL		***2519.00***	***15.39***	***2534.39***	***2519.00***	***13.89***	***2532.89***	***2787.67***	***15.54***	***2803.21***

Notes: The above estimates do not include the recoveries shown below which are adjusted in reduction of expenditure.

Revenue Section										
North Eastern Areas	2552	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New and Renewable Energy	2810	-1578.00	0.00	-1578.00	-1778.00	0.00	-1778.00	-2500.00	0.00	-2500.00
Total-Revenue Section		**-1578.00**	**0.00**	**-1578.00**	**-1778.00**	**0.00**	**-1778.00**	**-2500.00**	**0.00**	**-2500.00**
Capital Section										
Capital Outlay on New and Renewable Energy	4810	0.00	0.00	0.00	-200.00	0.00	-200.00	0.00	0.00	0.00
Total Recoveries		**-1578.00**	**0.00**	**-1578.00**	**-1978.00**	**0.00**	**-1978.00**	**-2500.00**	**0.00**	**-2500.00**

The expenditure provisions, net of above recoveries, will be as under:

Revenue	846.00	15.39	861.39	446.00	13.89	459.89	192.67	15.54	208.21
Capital	95.00	0.00	95.00	95.00	0.00	95.00	95.00	0.00	95.00
Total	**941.00**	**15.39**	**956.39**	**541.00**	**13.89**	**554.89**	**287.67**	**15.54**	**303.21**

ANNEXURE –III

MINUTES OF THE SEVENTEENTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2015-16) HELD ON 4th APRIL, 2016 IN COMMITTEE ROOM G-074, PARLIAMENT LIBRARY BUILDING, NEW DELHI

The Committee met from 1130 Hrs. to 1345 hrs.

PRESENT

LOK SABHA

Dr. Kirit Somaiya - Chaiperson

2. Shri Ashwini Kumar Chaubey
3. Shri Harish Dwivedi
4. Shri Bhagat Singh Koshyari
5. Kunwar Sarvesh Kumar
6. Dr. Arun Kumar
7. Shri Jagdambika Pal
8. Shri Ravindra Kumar Pandey
9. Shrimati Krishna Raj
10. Shri M.B. Rajesh
11. Shri Vinayak Bhaurao Raut
12. Shri Gutha Sukender Reddy
13. Shri Bhanu Pratap Singh Verma

RAJYA SABHA

14. Shri V.P. Singh Badnore
15. Shri Oscar Fernandes
16. Shri S. Muthukaruppan
17. Shri Javed Ali Khan
18. Dr. K.P. Ramalingam
19. Shri Ananda Bhaskar Rapolu
20. Dr. Anil Kumar Sahani
21. Smt. Viplove Thakur

SECRETARIAT

1. Shri N.K.Pandey - Director
2. Smt. L.N. Haokip - Under Secretary

Witnesses

MINISTRY OF NEW AND RENEWABLE ENERGY

1.	Shri Upendra Tripathy	Secretary
2.	Shri Tarun Kapoor	Jt. Secretary
3.	Ms Varsha Joshi	Jt. Secretary
4.	Shri Santosh D. Vaidya	Jt. Secretary
5.	Shri J.B. Mohapatra	JS&FA
6.	Shri J.C. Sharma	Eco. Adv.
7.	Dr. N.P. Singh	Sr. Consultant
8.	Shri K.S. Popli	CMD, IREDA
9.	Dr. S. Gomathinayagam	DG, (NIWE)
10.	Dr. Yogender Kumar Yadav	DG, (NIBE)
11.	Dr. Ashvini Kumar	MD, SECI
12.	Dr. O.S. Sastry	DG (NISE)
13.	Shri Sohail Akhtar	Advisor
14.	Shri B.K. Bhatt	Advisor
15.	Shri V.K. Jain	Advisor
16.	Shri H.R. Khan	Advisor
17.	Shri G.L. Meena	Advisor
18.	Dr. B.S. Negi	Advisor
19.	Shri Dilip Nigam	Advisor
20.	Shri B.L. Ram	Advisor
21.	Dr. A.K. Tripathi	Advisor
22.	Dr. Rajesh Dube	Advisor
23.	Dr. M.R. Nouni	Advisor

2. At the outset, the Chairperson welcomed the Members of the Committee and the representatives of the Ministry of New and Renewable Energy to the sitting of the Committee. He then request the Ministry to apprise the Committee about their performance, viz. financial and physical, during the year 2015-16. He also asked the Ministry to brief the Committee about the budgetary allocation and physical target set for the year 2016-17.

3. After introducing themselves to the Committee, the representatives of the Ministry of New and Renewable Energy made a power point presentation covering the major achievements during 2015-16, budgetary allocation for NCEF and MNRE for the year 2016-17. Thereafter, the Secretary, MNRE, briefed the Committee on the Demands for Grants for the year 2016-17 and the Budgetary allocation vis-a-vis actual expenditure of the last three years.

4. The Committee inter-alia discussed with the representatives of the MNRE, the following important points: -

i) Achievements vis-a-vis targets under various programmes during 2015-16;

ii) Financial requirements and allocation for 2016-17 vis-à-vis physical targets;

iii) Performance and various issues relating to solar - solar lamp, solar street lights, etc.

v) Performance under waste to energy, biomass, biogas, tidal etc.;

vi) Possibility of hybrid projects, *viz*, solar and wind; wind and tidal waves.

vii) Progress on the Renewable Energy Bill

viii) Research and Development Programmes in the renewable energy sector.

5. The Members sought clarifications on various issues relating to the subject and the representatives of the Ministry responded to the same. The Committee directed the representatives of the Ministry to furnish written replies to the queries which could not be readily responded to by them.

6. The verbatim proceedings of the sitting of the Committee were kept on record.

The Committee then adjourned.

ANNEXURE - IV

MINUTES OF THE TWENTIETH SITTING OF THE STANDING COMMITTEE ON ENERGY (2015-16) HELD ON 27th APRIL, 2016, IN COMMITTEE ROOM 'B', PARLIAMENT HOUSE ANNEXE, NEW DELHI

The Committee met from 1600 hrs to 1700 hrs

PRESENT

LOK SABHA

Dr. Kirit Somaiya - Chairperson

22. Shri Harish Dwivedi
23. Shri Bhagat Singh Koshyari
24. Dr. Pritam Gopinath Munde
25. Smt. Krishna Raj
26. Shri Vinayak Bhaurao Raut
27. Shri Gutha Sukender Reddy
28. Shri Devendra Singh alias Bhole Singh
29. Shri Malyadri Sriram

RAJYA SABHA

30. Shri V.P. Singh Badnore
31. Shri Oscar Fernandes
32. Shri Pyarimohan Mohapatra
33. Dr. K.P. Ramalingam
34. Shri Ananda Bhaskar Rapolu

SECRETARIAT

1. Shri K. Vijayakrishnan - Additional Secretary
2. Shri N.K. Pandey - Director
3. Smt. L. Nemjalhing Haokip - Under Secretary

List of Witnesses

x x x x x x x x x x x x x

2. At the outset, the Chairperson welcomed the Members and apprised them of the agenda for the sitting. The Committee then took up for consideration the following draft Reports:-

i) Hydro Power - A Sustainable, Clean and Green Alternative

ii) Action Taken on the recommendations contained in the 6th Report (16th Lok Sabha) on Demands for Grants of the Ministry of New and Renewable Energy for the year 2015-16.

iii) Action Taken on the recommendations contained in the 7th Report (16th Lok Sabha) on 'Energy Conservation.

(iv) Demands for Grants of the Ministry of Power for the year 2016-17.

(v) Demands for Grants of the Ministry of New and Renewable Energy for the year 2016-17.

3. After discussing the contents of the Reports in detail, the Committee adopted the aforementioned draft Reports without any change. The Committee authorized the Chairperson to finalize these Reports and present the same to both the Houses of Parliament in the current Session.

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The Committee then adjourned.