

**18**

**STANDING COMMITTEE  
ON ENERGY  
(2010-2011)**

**FIFTEENTH LOK SABHA**

**MINISTRY OF NEW AND RENEWABLE ENERGY**

**DEMANDS FOR GRANTS  
(2011-2012)**

**EIGHTEENTH REPORT**



सत्यमेव जयते

**LOK SABHA SECRETARIAT  
NEW DELHI**

*August, 2011 / Sravana, 1933 (Saka)*

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STANDING COMMITTEE ON ENERGY  
(2010-2011)

(FIFTEENTH LOK SABHA)

MINISTRY OF NEW AND RENEWABLE ENERGY

DEMANDS FOR GRANTS  
(2011-2012)

*Presented to Lok Sabha on 17.8.2011*

*Laid in Rajya Sabha on 17.8.2011*



LOK SABHA SECRETARIAT  
NEW DELHI

*August, 2011/Sravana, 1933 (Saka)*

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COMPOSITION OF THE STANDING COMMITTEE  
ON ENERGY (2010-11)

Shri Mulayam Singh Yadav — *Chairman*

MEMBERS

*Lok Sabha*

2. Mohammad Azharuddin
3. Shri S.K. Bwiswmuthiary
4. Shri P.C. Chacko
5. Shri Adhir Ranjan Chowdhury
6. Shri Ram Sundar Das
7. @Shri Paban Singh Ghatowar
8. \*Shri Syed Shahnawaz Hussain
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17. #Dr. K.S. Rao
18. Shri Ganesh Singh
19. Shri Radha Mohan Singh
20. Shri Vijay Inder Singla
21. Shri E.G. Sugavanam

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@ Ceased to be member of the Committee *w.e.f.* 12th July, 2011.

\* Nominated *w.e.f.* 18th October, 2010 *vice* Shri Arjun Munda.

\*\* Nominated *w.e.f.* 27th September, 2010 *vice* Shri Subhash Bapurao Wankhede.

# Ceased to be member of the Committee *w.e.f.* 28th January, 2011.

*Rajya Sabha*

22. Shri Govindrao Adik
23. Shri V.P. Singh Badnore
24. \*\*\*Shrimati Shobhana Bhartia
25. Shri Shyamal Chakraborty
26. Shri Rama Chandra Khuntia
27. Shri Bhagat Singh Koshyari
28. Shri Jesudasu Seelam
29. \*\*\*Shri Mohammad Shafi
30. Shri Motilal Vora
31. Shri Veer Pal Singh Yadav

SECRETARIAT

1. Shri Brahm Dutt — *Joint Secretary*
2. Smt. Abha Singh Yaduvanshi — *Director*
3. Shri N.K. Pandey — *Additional Director*
4. Shri Rajesh Ranjan Kumar — *Deputy Secretary*
5. Smt. L. Nemjalhing Haokip — *Executive Officer*

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\*\*\*Nominated *w.e.f.* 21st September, 2010.

## INTRODUCTION

1. 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 2011-12.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 18th April, 2011. 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 (2011-12).

3. The Report was considered and adopted by the Committee at their sitting held on 27th June, 2011.

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 observations and recommendations of the Committee have been printed in bold letters in Part-II of the Report.

NEW DELHI;  
25 July, 2011  
03 Sravana, 1933 (Saka)

MULAYAM SINGH YADAV,  
Chairman,  
Standing Committee on Energy.

# REPORT

## PART I

### NARRATION ANALYSIS

#### I. INTRODUCTORY

1.1 Economic growth, increasing prosperity and urbanisation, rise in per capita consumption, and spread of energy access are the factors likely to substantially increase the total demand for electricity. India's substantial and sustained economic growth is placing enormous demand on its energy resources. In the last six decades, in spite of substantial increase in installed electricity capacity in India, demand has outstripped supply. Thus, there is an emerging energy supply-demand imbalance. Already, in the electricity sector, official peak deficits are of the order of 12.7%, which could increase further in the long term. The demand and supply imbalance in energy sources is pervasive requiring serious efforts by Government of India (GoI) to augment energy supplies. To meet the growing need, there has been heavy dependence on fossil fuels and conventional sources of energy which are very scarce. Reportedly, the country imports about 80% of its oil. There is a threat of these increasing further, creating serious problems for country's future energy security. There is also a significant risk of lesser thermal capacity being installed on account of lack of indigenous coal in the coming years because of both production and logistic constraints, and increased dependence on imported coal. Significant accretion of gas reserves and production in recent years is likely to mitigate power needs only to a limited extent. Difficulties of large hydro are increasing and nuclear power is also beset with problems. The country thus faces possibility of severe energy supply constraints. There is, therefore, growing need to look forward to renewable energy sources such as water, solar, wind, biomass etc. which are available in abundance in the country as they can supplement the energy requirement of the country.

1.2 Also a very large population continue to live with no access to electricity and other forms of commercial energy. It is reported that, more than 50% of the population has little or no commercial energy access for their living and livelihood. Others with access often have to cope with poor and erratic availability of electricity and other fuels. With constraints faced in resource availability and in delivery



mechanisms, traditional means of energy supply are falling short. This is likely to be the case in the foreseeable future so that energy access will continue to remain a problem.

1.3 Renewable energy has been an important component of the country's energy planning process for some time now. The importance of renewable energy sources in the transition to a sustainable energy base was recognized in the early 1970s. Thereby, the Department of Non-Conventional Energy Sources was established in 1982. It was then upgraded to a full-fledged Ministry *viz.* Ministry of Non-Conventional Energy Sources (MNES) in 1992 which was subsequently renamed as the Ministry of New and Renewable Energy (MNRE). MNRE is the nodal Ministry of the Government of India to deal with all matters relating to new and renewable energy.

1.4 The MNRE has been facilitating the implementation of broad spectrum programmes including harnessing renewable power, renewable energy to rural areas for lighting, cooking and motive power, use of renewable energy in urban, industrial and commercial applications and development of alternate fuels and applications. The endeavour of the Ministry is to promote renewable energy utilization for stationary, portable and transport uses, develop affordable renewable energy technologies and increase the contribution of renewable energy in the total energy mix today and in the years to come. The MNRE has a wide range of programmes on research and development, demonstration and promotion of renewable energy for rural, urban, commercial and industrial applications as well as for grid-interactive power generation. The Ministry adopts three-fold uses of renewable energy technologies across the country: (i) providing budgetary support for research, development and demonstration of technologies; (ii) facilitating institutional finances through various financial institutions; and (iii) incentives, tax holidays, depreciation allowance and remunerative returns for power fed into the grid. Ministry has initiated a series of activities for meeting ever increasing human resource requirement in renewable energy area. These include award of Renewable Energy Fellowships, incorporating renewable energy in the course curriculum; training programmes for renewable energy professionals.

1.5 Under the Allocation of Business Rules, the MNRE has been assigned the following specific responsibilities:

- Research and development of biogas and programmes relating to biogas units;
- Commission for Additional Sources of Energy (CASE);

- 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;
- Programme relating to improved *chulhas* and research and development thereof;
- Indian Renewable Energy Development Agency Limited;
- Research and development of other non-conventional/renewable sources of energy and programmes relating thereto;
- Tidal energy;
- Integrated Rural Energy Programme (IREP);
- Geothermal energy
- Bio-fuels: (i) National Policy; (ii) 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 biofuels.

1.6 Functions of the Ministry are as under:

- (i) Development and Deployment (demonstration/extension) of:
  - Standalone renewable energy systems/devices and services to supplement/provide energy needs of cooking, lighting & motive power in rural areas;
  - Renewable energy products and services for urban, industrial and commercial applications, including energy recovery from urban and industrial wastes and effluents; and
  - Grid-interactive/Off-grid renewable power systems to supplement fossil fuel based electricity generation.
- (ii) Supporting related R&D activities/projects taken up by institutions and industry.
- (iii) Fostering international cooperation in new and renewable energy sector.
- (iv) HRD development in new and renewable energy sector.
- (v) Information, Publicity and Public Awareness creation in the sector.

## II. ELEVENTH FIVE YEAR PLAN — REVIEW OF PROGRESS

1.7 Against the 11th Plan (2007-12) allocation of Rs. 4000 crore, the actual budget provision made available to the MNRE during the first four years has been Rs. 2868 crore at BE level and Rs. 2537.40 crore at RE level. The actual 11th plan expenditure against the same has been Rs. 2359.18 crore as on 28.2.2011.

1.8 Scheme/Programme-wise budgetary allocation for 11th Plan is as under:—

	<i>(Rs. in crore)</i>
• Grid-Interactive & Distributed Renewable Power	1,560
• Renewable Energy for Rural Applications	900
• Renewable Energy for UIC Applications	275
• Research, Design & Development	600
• Support Programmes	575
• Externally aided Programmes (EAP)	50
• Spill-Over Liabilities	40
Total	4,000

1.9 Year-wise and programme-wise details of financial allocations and expenditure during the first four years of the Plan period are given in Annexures I & II and that of physical targets and achievements in Annexure-III. According to the MNRE, major achievements have been under Solar photovoltaic, Remote Village Electrification, wind power and small hydro power programmes. Programme-wise position along with reasons for shortfall in achievements, and action plan for achievement of remaining 11th plan targets as furnished by the MNRE are detailed in the succeeding paragraphs:

### **Remote Village Electrification Programme**

1.10 The Remote Village Electrification Programme of the Ministry envisages providing renewable energy based lighting/basic electricity in villages/hamlets where grid connectivity will not be feasible in near future. The Ministry had set a target for covering 10,000 villages/hamlets under the Remote Village Electrification Programme during the 11th Plan. The BE/RE and the physical target/achievements during

the plan period so far for the programme (as on 28.2.2011) are given below:—

Year	Physical			Financial	
	Target	Achievement		BE/RE (Rs. in dore)	Expenditure (Rs. in crore)
		Sanctioned	Completed		
2007-08	2000	1992	1279	143	133.0
2008-09	1500	1694*	326	80/88	88.0
2009-10	1500	1431	1536**	80/82.85	82.85
2010-11 (as on 28.2.2011)	1500	1037	1669***	80	76.32
<b>Total</b>	<b>6500</b>	<b>6154</b>	<b>4810</b>		<b>380.17</b>

\*includes 1058 border villages where SPV/Micro hydel based electricity/lighting systems were sanctioned under a Special Package for electrification in border villages of Arunachal Pradesh.

\*\*includes 523 villages where SPV Homelight systems have been provided under Ar. Package.

\*\*\*includes 203 villages provided Micro Hydel based electricity systems under Ar. Package In addition to the above mentioned figures, 70 villages are also being provided electricity through solar photovoltaic power plants in the Ladakh region of Jammu and Kashmir.

1.11 Grid electrification is the preferred mode for the villages as well as for the State Governments and only those villages where grid connectivity may not be possible are taken up under this programme. There has been delay in earmarking villages for this programme by the State Governments as this is dependent upon the progress of Rajiv Gandhi Grameen Vidyutikaran Yojana. Therefore, achievement of the set target for the Plan is dependent upon the States identifying the villages and hamlets which will not be covered for grid electrification under RGGVY, surveying these villages, preparing proposals for support, mobilizing matching state share and taking necessary action for timely implementation. At the start of the XIth plan 2812 villages/hamlets sanctioned were ongoing. During the XIth plan period so far 6154 villages/hamlets have been sanctioned. Of these as of 28.2.2011, 4810 villages/hamlets have been completed and balance 4156 are either ongoing or have been dropped by the State Governments. According to the Ministry, not many proposals are being received though Chief Secretaries of all States have been requested to expedite this process. Therefore, the goals envisaged for the XIth plan may not be fully reached.

### Small Hydro Power (SHP)

1.12 Physical & Financial achievements during the plan period so far have been as under:—

Year	Physical	
	Target	Achievement
2007-08	200 MW	204.75 MW
2008-09	250MW	248.93 MW
2009-10	300 MW	305.27 MW
2010-11	300MW	250.50 MW (28.2.2011 )

  

Year	Financial (Rs. in crore)		
	Outlay		Expenditure
	BE	RE	
2007-08	50.00	50.00	49.95
2008-09	57.50	82.5	82.49
2009-10	107.00	107.00	106.93
2010-11	152.00	152.00	149.23 (28.2.2011)

1.13 The 11th Plan target for SHP is 1400 MW. For the first four years, the target has been 1050 MW. Against this, a capacity addition of 997 MW has been achieved up to 28.2.2011. Full target of the 11th Plan is likely to be achieved. The Ministry has been interacting with the State Governments and SHP developers and stepped up its efforts for close interaction with the States and project-wise monitoring of projects implemented both in public and private sector.

### Biomass Co-generation Programme

1.14 Details of BE/RE and actual expenditure so far during 11th Plan are furnished below:—

Year	BE (Rs. in cr.)	RE (Rs. in cr.)	Expenditure (Rs. in cr.)	Target (MW)	Achievement (MW)
2007-08	30.00	19.00	13.72	250	266
2008-09	28.00	18.00	10.12	300	345
2009-10	29.90	29.90	29.90	400	447
2010-11	30.00	30.00	30.23 (as on 28.2.2011)	455	433.50 (as on 28.2.2011)

There is no shortfall in achievement of the physical target during the first four years of the 11th Plan. As per the Ministry, the XIth plan target is expected to be achieved.

### Biogas Programme

1.15 Year-wise BE, RE and actual expenditure *vis-a-vis* physical targets and achievement up to 28.2.2011 for the biogas programme during the 11th plan is given below:—

Year	Financial (Rs. in crore)		Physical (in lakh nos.)	
	BE/RE	Expenditure	Target	Achievement
2007-08	36/56	55.90	1.04	0.89
2008-09	63/57	56.99	1.24	1.08
2009-10	63/68.15	68.15	1.50	1.20
2010-11	90/110	108.36	1.50	1.06
		(up to 28.2.2011)		(up to 28.2.2011)
Sub Total	252/291.15	289.40	5.28	4.23
2011-12	130	—	1.50	—
Grand Total	382/421.15	—	6.78	—

During the first four year of the plan 4.67 lakh biogas plants are likely to be set up with an expenditure of Rs. 291.04 crore. Efforts are on to achieve the target of 6.40 lakh nos. of biogas plants during the 11th Plan, but this may not be fully achieved due to various operational constraints including sharing of 50% of the cost by the beneficiaries, penetration of LPG in rural areas and non-availability of sufficient funds with MNRE.

### Wind Power

1.16 A target of 9000 MW has been set for the 11th Plan under the wind power programme, against which 6090 MW has been achieved up to Jan. 2011. Year-wise details of physical and financial performance are as under:—

Year	BE (Rs. in cr.)	RE (Rs. in cr.)	Expenditure (Rs. in cr.)	Target (MW)	Achievement (MW)
2007-08	22.90	15.50	16.06	1500	1663
2008-09	22.40	19.90	13.51	2000	1485
2009-10	20.30	14.80	14.70	2500	1565
2010-11	48.00	34.90	34.90	2000	1377
Total					6090

Further capacity addition of 600 MW is expected during Feb.-March, 2011 and a target of 2400 MW has been kept for 2011-12. With this, the target of 9,000 MW for 11th Plan is expected to be achieved.

### Solar Thermal/water heating systems

1.17 The budgetary allocation for solar thermal applications under Off-grid solar energy systems is Rs. 40 crore out of a total budget (inclusive of SPV component) of Rs. 430 crore during 2011-12. A target of 0.6 million sq.m of collector area has been set for solar water heating, air heating, solar steam cooking and other thermal applications during the year.

1.18 During the first three years of 11th Plan about 1.6 millions sq.m of collector area for solar water heating and 25 solar steam generating/community cooking systems covering 12,000 sq.m of dish area were installed in the country. An amount of Rs. 38.42 crore was spent as against the BE of Rs. 92.40 crore which includes expenditure towards green buildings and solar cities also. Year-wise details in respect of the major component of solar water heating are as under:—

Year	Physical (Lakh sq.m)		Financial (Rs. in crore)	
	Target	Achievement	Target	Achievement
2007-08	4	4	57.90	18.00
2008-09	6	5.5	24.50	13.96
2009-10	6	6.2	10.0	10.0
2010-11	10	5.2 till Jan., 2011	30	30
2011-12	11	—	50.00	—
Total	37			

To achieve the targets of 2011-12, a new Off-grid scheme for solar energy applications is under implementation wherein the programme is being implemented by various channel partners including Government bodies and manufacturers as System Integrators. The financial mechanism also includes capital subsidy and soft loans for installation of solar thermal systems. These provisions will help in achieving the targets during the year.

### Decentralised SPV systems

1.19 No State-wise targets were fixed for the 11th plan for SPV systems. A target of 25 MW for SPV power and systems were fixed

for the 11th Plan. During the 11th Plan period, 1,45,920 solar lanterns, 2,17,657 home lights, 48,317 street lights, 236 SPV pumps, standalone power plants of 3.884 MW capacity, all together amounting to 17.39 MW, and grid connected power projects of 27.04 MW capacity have been installed in the country. The grid and off-grid systems total 44.43 MW capacity.

### **Biomass Gasifier**

1.20 A target for installation of aggregate capacity 50 MW from biomass gasifiers. This includes projects in rural areas for meeting unmet demand of electricity and captive power needs in rice mills and other industries, and small tail end grid connected biomass power projects. For the first 4 years, the target was 48 MW. Against this, capacity addition of 48.12 MW has been achieved up to 31.1.2011. The Plan target is likely to be overachieved.

### **Waste to Energy**

1.21 With the development of a number of projects on energy from urban and industrial wastes as well as Biomass (non-bagasse) co-generation, the target for the 11th Plan is expected to be achieved in full.

## **III. ANALYSIS OF DEMANDS FOR GRANTS OF MNRE FOR 2011-12.**

1.22 The MNRE presented Demand No. 68 to Parliament for the financial year 2011-12 on 11th March, 2011. The Plan and Non-plan provisions made in the Revenue and the Capital Sections of the Budget are as under:—

### **Demand No. 68**

(Rs. in crore)

	Plan	Non-Plan	Total
Revenue Section	1132.50	14.38	1146.88
Capital	65.50	—	65.50
<b>Grand Total (Revenue + Capital)</b>	<b>1198.00</b>	<b>14.38</b>	<b>1212.38</b>

1.23 A statement showing the details of the Budget Estimates for the year 2011-12 *vis-a-vis* that of Budget Estimates/Revised Estimates (BE/RE) of 2010-11 is given at **Annexure-IV**.



1.24 The Central Plan Outlay of the Ministry of New and Renewable Energy during the year 2010-11 and for the year 2011-12 are given below:—

(Rs. in crore)

	2010-11		2011-12
	BE	RE	BE
Budgetary Support	1000.00	995.00	1200.00
IEBR	950.00	1496.65	950.00
Total	1950.00	2491.65	2150.00

1.25 The total outlay of the Ministry for the financial year 2011-12 is Rs. 2150 crore. Out of this, the Internal and Extra Budgetary Resources (IEBR) constitutes Rs. 950 crore and Gross Budgetary Support (GBS) accounts for Rs. 1200 crore. The Committee have been informed that GBS to the tune of Rs. 2275 crore was proposed by the Ministry. Out of this, the MNRE have informed that the requirements in respect of two components under Solar Mission *i.e.* Rs. 650 crore for solar and Rs. 75 crore towards solar payment guarantee fund that were not expected to materialize during the year, were withdrawn. The GBS actually sanctioned by the Ministry of Finance is Rs. 1200 crore. A detailed statement in this regard as provided by MNRE is given at **Annexure-V**.

1.26 The Committee desired to know the reasons for hike in Central Plan Outlay for the year 2011-12 particularly in the context of non-utilisation of funds in previous years. The Ministry in a written note stated that the total allocation for Annual plan 2011-12 is only Rs. 1200 crore against the total requirement of Rs. 2275 crore (Rs. 1325 crore for solar mission component and Rs. 950 crore for other programmes of the Ministry). It represents a normal 20% hike over last year's allocation and evidently does not take into consideration the budget requirement for the Mission that was launched last year. In order that the activities of both components do not suffer seriously, the MNRE have requested MoF for additional allocation from National Clean Energy Fund for utilization towards the mission activities. In case the same is not received, the activities under the Mission as well as some other programmes of the Ministry will be affected.

1.27 When asked about the status of the efforts of the Ministry to obtain additional funds from National Clean Energy Fund and its alternative proposal in case of failure in obtaining the same, the Committee were informed:

“Ministry of Finance has agreed to consider proposals for allocation of additional funds for the activities of the National Solar Mission during 2011-12 from the National Clean Energy Fund. Proposals are being sent to that Ministry. If funds are not made available, Planning Commission will be requested to allocate additional funds at the stage of supplementary grants”.

1.28 The Annual Plan outlay including Budgetary Support and Internal and Extra Budgetary Resources (IEBR) for the last three years with BE/RE and actual break-up are shown below:—

(Rs. in crore)

	2008-09			2009-10			2010-11		
	BE	RE	Actual	BE	RE	Actual	BE	RE	Actual Upto 31.1.2011
GBS	620	499.40	441.87	620	560	550.68	1000	995.00	820.44
NETIEBR	647.00	647.00	806.25	726.78	939.07	1221.27	950	1496.65	1315.66
Total Outlay	1267.00	1146.40	1248.12	1346.78	1499.07	1771.95	1950	2491.65	2136.10

1.29 The Committee desired to know the reasons of variations between BE/RE and actual expenditure. The Ministry in a written reply stated as under:—

“During 2008-09 the expenditure over 88% of RE level; the shortfall was due to the declaration of General Elections, due to which implementation and expenditures were impacted. During 2009-10 there was improvement and the expenditure was nearly equal to RE level. During 2010-11 there has been further improvement and it is expected that the funds will almost fully utilized”.

1.30 On being enquired about the reasons for such a miniscule reduction in budgetary support at RE stage in 2010-11, the Ministry informed the Committee as under:—

“The reduction was done as funds were reappropriated to the Non-Plan expenditure with the approval of Ministry of Finance to meet some shortfall in essential requirements such as salary. This has not affected the target achievement of various renewable energy programmes as the outstanding liabilities can be carried forward to next year”.

1.31 The Committee then queried about quarter-wise expenditure made during last three years. The Ministry furnished the following information:—

*(Rs. in crore)*

Year	BE	RE	1st quarter	2nd quarter	3rd quarter	4th quarter	Total
2007-08	628	483	63.45	47.90	174.24	193.13	478.72
2008-09	620	499.40	15.63	168.78	106.24	151.14	441.79
2009-10	620	560	108.60	143.58	129.45	169.05	550.68
2010-11	1000	995	260.12	276.29	234.77	116.82 (up to 28.2.11)	888.00 (up to 28.2.11)

1.32 While deposing before the Committee during evidence, the Secretary, Ministry of New and Renewable Energy explained about the utilization of the budget allotted to the Ministry as under:—

“Last year, allocation of Rs.1000 crore was made ... out of which 98 per cent of funds were utilized. If we look at the utilization aspect of all the Ministries, we will find that it is the case of maximum utilization. The utilization during last year has increased to the level of 980 crore rupees against the previous level of 548 crore rupees. We have put in a lot of hard work. There are some minor heads too. That’s why it is not feasible to utilize the entire fund allocated under a particular head at the time of closing of the financial year. The spending for the first quarter was 260 crore rupees, 276 crore rupees during the second quarter and 209 crore rupees during the third one were utilized. In fact, the utilization during the last quarter was the lowest. Sometimes, the extent of this quarter-wise utilization is much more than and sometimes, it is equal to prescribed under the norms fixed by the Department of Expenditure. And, during January-March period, it is the lowest. Last year, the Committee had said that the progress about the wind energy was not satisfactory. I would like to tell you that we had fixed a target of 2000 MW for the current year but we have achieved was the generation capacity of 1700 MW. This year, we had fixed a target of 2772 MW with regard to Grid Power whereas we have achieved a target of 3157 MW. It is for the first time that there has the capacity addition of more than 3000 MW during the period of one year. As compared to the

conventional power, its capacity was only 3 per cent at the beginning of tenth five year plan. It has now increased to 11 per cent. It means that in terms of growth, we are better than them. Under the 'Waste-to-energy' projects, we have achieved each & every target fixed thereunder, though there were various problems. Still, we are working hard and therefore, we hope to achieve all the targets fixed for the 11th five year plan".

#### **IV. MAJOR PROGRAMMES OF NEW AND RENEWABLE POWER**

##### **A. National Solar Mission**

1.33 The main objective of the Jawaharlal Nehru National Solar Mission, according to the Ministry of New and Renewable Energy is to establish India as a global leader in solar energy, by creating policy conditions for its rapid diffusion across the country quickly and achieve a scale, large enough to drive down costs to levels required to achieve grid parity by 2022. The Mission targets include (i) deployment of (a) 20,000 MW of grid connected solar power by 2022, (b) 2,000 MW of off-grid solar applications including 20 million solar lights by 2022, (c) 20 million sq.m. solar thermal collector area, (ii) creation of favourable conditions for developing solar manufacturing capability in the country; and (iii) supporting R&D and capacity building activities to achieve grid parity by 2022. The Mission would be implemented in three phases, first phase being upto March, 2013.

1.34 Regarding the physical and financial planning for the first phase of the Mission, the Committee have been informed that:—

"A target to set up 1,100 MW grid connected solar plants, including 100 MW capacity plants as rooftop and other small solar power plants was approved by the Government for the first phase of the Mission till March 2013. In addition, a target of 200 MW capacity equivalent off-grid solar applications and cumulative 7 million square metre solar thermal collector area by March, 2013 is also approved. A budget of Rs. 4,337 crore for the first phase of the Mission was also approved."

1.35 The Committee have been further informed that the target of 200 MW capacity equivalent off-Grid for the first solar applications for the first phase of the Mission has been divided into 32 MW for 2010-11, 68 MW for 2011-12 and remaining 100 MW for 2012-13. Also, the guidelines for technical qualification and accreditation of system integrators and refinancing off-grid solar application through NABARD were issued.

1.36 On being asked about the physical and financial targets and achievements during 2010-11 under Solar Mission, the Ministry have furnished as under:

Sl.No.	Activity	Physical Target	Physical Achievement	Financial Allocations (Rs. in cr.)	Expenditure As on 21.2.2011 (Rs. in cr.)
1.	R&D	—	—	65.0	54.5
2.	Grid Solar Power	200MW (sanction)	802MW (500 MW solar thermal and 302 MWSPV projects) (sanctioned)	30.0	6.5
3.	Off-grid solar applications	32MW (sanction)+ 1.0 million sq. m. thermal collector area	36MW (sanctioned)+ 0.52 million sq. m. thermal collector area	262.0	258.0
4.	Other activities (HRD, industry support etc.)	Not applicable	Not applicable	3.0	1.5
5.	SEC/National Institute for Solar Energy	-do-	-do-	12.5	10.0
Total				372.5	329.5

1.37 In a consolidated statement detailing the physical and financial targets/achievements during 2010-11 and the physical targets and financial allocation for 2011-12 under Solar Power, the MNRE has brought as under:

Sl. No.	Programme component	2010-11				2011-12	
		Physical target	Achievement (As on 31.1.2011)	BE (Rs. in crore)	Expd. (As on 28.2.2011)	Physical	Outlay (Rs. in crore)
1.	Grid Solar Power	200MW	21.38MW	30	22.08	300 MW (Sanction)	55
2.	Off-Grid Solar Applications	32 MWeq	3.92 MWeq	250	241.59	32 MWeq Sanction/20 completion	430

1.38 When asked about the reasons for the poor performance in terms of both under Grid and Off-Grid solar power during 2010-11, the Ministry in a written reply stated as under:

“The new schemes for both grid and off-grid solar under the Mission were announced in June/July 2010. The target for 2010-11 was set for sanction of 200 MW capacity of grid connected solar power projects and 32 MW of off-grid solar projects. Ministry is providing about 12 months for completion of the PV projects and 28 months for grid solar thermal power projects, as a result large number of PV projects sanctioned in 2010-11 will be completed during 2011-12. During the year Ministry had actually sanctioned a total of 802 MW capacity of grid solar power projects and 40.6 MW capacity of the off-grid solar projects. As the target for 2010-11 was fixed for sanctioning of the projects under the Mission, the performance during 2010-11 has been satisfactory.”

1.39 The Committee further desired to know the budgetary allocation made for National Solar Mission during the year 2011-12. The MNRE in a note furnished as under:

“During 2011-12 an amount of Rs. 556 crore has been allocated for the activities covered under the National Solar Mission as per the following activity-wise break-up:

Activity	Physical Target	BE (Rs. in cr.)
Grid Solar Power	300 MW (sanction)	55
Off-grid solar applications	32 MW(SPV-sanction)+ 0.60 million sq. m. thermal collector area	430
SEC	—	30
R&D	—	40
Other activities (HRD, training etc.)	—	1
<b>Total</b>		<b>556</b>

1.40 In their Annual Plan for 2011-12, the Ministry had proposed for an allocation of Rs. 100 crore under Grid Solar Power and Rs. 1100 crore for Off-Grid Solar Applications. However, an amount of Rs. 55 crore and Rs. 430 crore have actually been allocated to Grid and Off-grid schemes respectively for the year 2011-12.

1.41 On being asked whether the actual financial allocation would be sufficient to achieve the targets, the Ministry in a written reply stated as mentioned below:

“During 2011-12 the Ministry has set a target to sanction grid solar power projects of 300 MW capacity. The process for selection of projects will be started in next few months and completed in following few months. Therefore, Ministry will be able to sanction the projects for the targeted capacity well in time. With regard to completion of 200 MW capacity projects, Ministry is reviewing the progress of the projects selected by both IREDA and NTPC Vidyut Vypar Nigam. Ministry is also holding meetings with banks, project developers and States from time to time to facilitate their progress. As 12 month time period is given for completion of the projects and many of the projects are in reasonably advanced stage, it is expected that most of the project developers will be able to commission their projects during 2011-12 and the set target will be achieved. Allocation for off-grid is insufficient to achieve earlier targets. The capacities sanctioned will be reduced.”

1.42 To a query as to why the target under Off-Grid solar applications were not increased for the year 2011-12 despite quantitative increase in the outlay, the Ministry replied as under:

“During 2010-11 Ministry has sanctioned 40.6 MW capacity projects with financial commitment of Rs. 563 crore and an amount of Rs. 155 crore was released as the first installment. In view of the committed liabilities for these projects which will be completed this year, the requirement of funds has been enhanced but target was not enhanced because the Ministry will not be able to release funds against new projects.”

1.43 Regarding the physical target under solar mission and its planning, the Secretary, Ministry of New and Renewable Energy deposited before the Committee as under:

“Under the Solar Mission, a target of 20,000 MW was to be achieved by the year 2022. In this, under phase-I *i.e.* upto March, 2013, a target of 1100 MW has been fixed to be achieved. Out of projects of 1100 MW, there are major Grid Power projects with 1000 MW target and 100 tail end *i.e.* small projects ranging between 100 KW & 2 MW. These would feed in Distribution Grid so that the transmission system gets improved and there is less wastage of electricity. In Kolar (Karnataka) a pilot project with a target of 3 MW has been proposed to be commissioned. The objective of

the project is that the power generator thereunder should be supplied to pumps being used during day time there for irrigation purposes. We had a target of 500 solar thermal as well as 500 solar PV. We have allocated 800 out of this. This Mission was launched in January last year. After that, during the period of next 4-5 months, the guidelines in this regard were framed after consultation with all the stakeholders, States, developers and agencies. In this process, the concept of bidding was involved and we have got a discount of 30 per cent over the tariff fixed by the CERC. It has been processed almost for the first time in this world. We are getting feedback from outside in this regard. People come and tell us that it is benchmark-type costing. It would be beneficial because not only the Indian company but the foreign company also has to bring engineering innovation along with the efficiency innovation with a view to reduce the cost. A target of 500 has been allocated to the Solar Thermal projects. A time period of 28 months has been given for commissioning these. Nowhere in the world, such projects have ever been commissioned in a period of less than 28 months. These should be commissioned by December-January. Our Ministry had a pilot project. Out of that, projects with the target of approximately 30 MW has been installed in various States such as Tamil Nadu, Rajasthan, Karnataka, West Bengal. As of now, the first so far thermal project with the target of approximate 2.5 MW has been installed in Rajasthan. It has not got commissioned as yet. Some problems are being faced in its synchronization. We have knowingly taken the 300 MW of the rest of the Solar Power projects to the end of this period. There are two reasons for this. The first is that we get the benefit of cost reduction and the second in that we come to know as to what we can do in this sector, based on the experiences of the people and technical research. By September-October, we are likely to allocate 300 MW more. The entire projects pertaining to the solar PV should be get commissioned by December, 2012 *i.e.* before the end of Phase-I. May be that some of those developers face difficulties in respect of 2-3 projects. It may cause some delay. The 500 MW thermal project should be get commissioned by 2012. With regard to pricing, I have told that the average tariff of solar thermal after discount comes to 11.48 rupees whereas, in respect of Solar P.V. it comes to 12.60 rupees. It is a challenging tariff. In this connection, the cost has to be reduced. We are regularly holding talks with the developers and banks, so that these may come to their financial closure. And also, the bank may be in a position to lend them. We are having a sitting in Mumbai tomorrow. I request you personally that wherever you hold any talks with bankers,



please ask them to let the concerned bank help in its financial closure. Bank also has a big responsibility in its timely closure. We have fixed a target of commissioning projects with 200 MW capacity by the end of current year. Earlier, a project with 2-3 MW capacity was commissioned and in comparison to that, it is a big leap forward. Lots of lessons would be there to learn as a result of this. Nearly, 130 people are project developers. From this, they would gain experiences regarding engineering and project-execution. Every latest technology from across the world is likely to be utilized in one form or the other in these projects. People are also mutually collaborating. Outsider company is also allowed in this connection. Also, there are directions that the Modules under the Solar P.V. should be manufactured in India only.”

## B. Wind Energy Programme

1.44 According to the Ministry’s Annual Report (2010-11), wind energy has emerged as the most promising 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 resource, facilitation and implementation of demonstration and private sector projects through various fiscal and promotional policies. A total capacity of 13,184 MW has been established up to January, 2011 in the country. India is now the fifth largest wind power producer in the world, after USA, Germany, China and Spain.

1.45 The physical and financial performance under the Wind Power Programme during the last four years, as furnished by the Ministry, is as under:

Year	BE (Rs. in cr.)	RE (Rs. in cr.)	Expenditure (Rs. in cr.)	Target (MW)	Achievement (MW)
2007-08	22.90	15.50	16.06	1500	1663
2008-09	22.40	19.90	13.51	2000	1485
2009-10	20.30	14.80	14.70	2500	1565
2010-11	48.00	34.90	34.90	2000	2350.35
Total					7063.35

1.46 The Committee pointed out at the consistently low achievement of the target, during the years 2008-09, and 2009-10 and sought the reasons thereof. The Ministry in a written reply stated that the

achievement in wind power sector is mainly from private sector investment which depends upon favourable investment conditions and conducive policy environment. The achievement during 2008-09 and 2009-10 were low mainly because of the global economic recession and regulatory/policy constraints in few States. The States like—Maharashtra, Karnataka and Andhra Pradesh performed very low in these years. The situation in 2010-11 has significantly improved in general and the Ministry has achieved a record 2350 MW in wind power.

1.47 In response to the query regarding setting of lower target i.e. 2000 MW in the year 2010-11 as compared to the target of 2500 MW in the year 2009-10 and the Ministry's Action plan to achieve the enhanced target of 2400 MW set for the year 2011-12, the Ministry in a written reply stated as follows:

“The target for the 11th Plan was 10,500 MW, which was reduced to 9000 MW at Mid-term Appraisal stage. However, the target of 2500 MW for 2009-10 continued to be as per the original target for 11th Plan. Target for 2010-11 was as per the revised Plan target. In view of improved situation in 2010-2011, the target for 2011-12 is achievable.”

1.48 On being asked about the reasons for non-utilization of fund under wind energy programme *i.e.* expenditure of only Rs. 26.90 crore against BE of Rs. 40 crore for the year 2010-11, the Ministry in a written reply stated that the funds in 2010-11 were mainly kept for Generation Based Incentive (GBI) scheme. However, as per suggestion of the Ministry of Finance, funds were to be released only after receipt of a copy of the income tax return of the company (to make sure they have not availed accelerated depreciation). The Generation Based Incentive (GBI) for projects commissioned during 2010-11 could not be released as their IT Return would take place in 2011-12. Funds requirement during 2011-12 is estimated to be of the order of Rs. 40 crore towards projects of capacity 400 MW. However, Rs. 33.00 crore has been allocated as Planning Commission had allocated less funds than proposed.

1.49 When asked how the Ministry would be able to achieve the enhanced target with less financial allocation, the Ministry stated that the physical target in a year have no direct bearing or relation with the financial allocation as funds under GBI Scheme on wind power are released for the projects sanctioned in previous years. The higher physical target of Rs. 2400 MW has been kept in view of the progress during 2010-11.

### C. Remote Village Electrification Programme (RVEP)

1.50 The Remote Village Electrification Programme is being implemented by the Ministry to provide lighting/electricity using renewable energy in those remote unelectrified villages and hamlets where grid connectivity will not be feasible in near future. The Ministry had set a target for covering 10,000 villages/hamlets under the RVE programme during the 11th Plan, of which 6154 villages/hamlets were sanctioned and 4810 villages/hamlets have been completed as on 28.02.2011. In balance 4156 villages, work is either ongoing or villages have been dropped by the State Governments.

1.51 On being asked the number of villages/hamlets dropped by the State Governments and the reasons for the same, the Ministry in a written reply informed as follows:

“As per the reports received so far from different States implementing agencies, a total of 782 villages and hamlets, for which support was sanctioned earlier by the Ministry under the Remote Village Electrification Programme, have been dropped. The number, however, could be larger which will be known only at the time of final settlement of accounts for each of the sanctioned projects. The main reason advanced by the State implementing agencies for dropping the sanctioned villages is their prior electrification through grid. In Chhattisgarh, some villages have been dropped due to accessibility problems as these are located in LWE affected areas.”

1.52 On a query regarding the number of ongoing villages/hamlets and the probable time for completion, the Ministry have stated that as on 1.4.2011, work of providing renewable energy system was under implementation in 3354 villages and hamlets. They are expecting that during 2011-12, around 2000 of these will be completed, while the rest are likely to be completed in the first year of the 12th Plan.

1.53 The physical targets and achievement *vis-a-vis* the financial allocation and expenditure during the last four years upto 28.02.2011 as furnished by the Ministry is as under:

Year	Physical			Financial	
	Target	Achievement		BE/RE	Expenditure
		Sanctioned	Completed	(Rs. in crores)	(Rs. in crores)
1	2	3	4	5	6
2007-08	2000	1992	1279	143	133.0
2008-09	1500	1694*	326	80/88	88.0

1	2	3	4	5	6
2009-10	1500	1431	1536**	80/82.85	82.85
2010-11 (as on 28.2.2011)	1500	1037	1669***	80	76.32
Total	6500	6154	4810		380.17

\*includes 1058 border villages where SPV/Micro hydel based electricity lighting systems were sanctioned under a Special Package for electrification in border villages of Arunachal Pradesh.

\*\*includes 523 villages where SPV Homelight systems have been provided under Ar. Package.

\*\*\*includes 203 villages provided Micro Hydel based electricity systems under Ar. Package. In addition to the above mentioned figures, 70 villages are also being provided electricity through solar photovoltaic power plants in the Ladakh region of Jammu and Kashmir.

1.54 The Committee desired to know whether the Ministry will be able to cover the remaining villages/hamlets by the end of 11th Plan, the Ministry in a written reply stated as under:

“It is to be mentioned that at the time of formulation of the 11th Plan, the Ministry had explicitly noted that “..... it is likely that the number of remote villages/hamlets would not exceed 5000/10,000 (*due to first preference for grid electrification under Rajiv Gandhi Grameen Vidyutikaran Yojana*). For planning purposes, however, it is assumed that there might still be around 10,000 remote villages/hamlets that might not be covered under RGGVY and would be covered under RVE. It is thus evident that the target for covering 10,000 villages was set in anticipation of proposals from the States, who only are empowered to identify such villages by denying them grid electrification under RGGVY. All the proposals received so far from the States for support under the Programme have been approved by the Ministry. Thus, achievement of the set target depends upon the State Governments identifying the remaining villages and submit proposals for support, after their surveys. As per present indications from the States, not many villages/hamlets are currently available for this Programme and hence the 11th Plan target may not be achieved.”

1.55 Explaining the reasons for the poor performance during the last four years, the Ministry stated that the responsibility for identification of villages/hamlets and also for submission of proposals for support under the Programme vests with the respective State Governments. The Ministry endeavours to approve support for all the

proposals received during the year. The performance trend for the past few years is thus a reflection of the commitment/preferences of the State Governments *vis-a-vis* grid electrification/renewable energy systems.

1.56 As regards the main problems faced by the Ministry from the State Governments in implementation of RVE Programme, the Ministry highlighted the following main difficulties on the part of the State implementing agencies:

- (a) Delays in identification and earmarking of villages and hamlets to be covered through renewable energy systems and not electrified by grid extension under Rajiv Gandhi Grameen Vidyutikaran Yojana. This necessitates a close coordination between the implementing agencies/ departments implementing the two programmes at the State level, and is found to be lax in most States. Due to these delays, the States are not able to submit proposals for support under the Remote Village Electrification Programme.
- (b) The States are also required to earmark funds for 10% balance of the costs of projects. In many cases, these have also not been provided timely.
- (c) The implementing agencies notified by the State Governments in most States lack necessary infrastructure and organizational support for implementation of projects in large number of remote villages.
- (d) Difficult law and order situation in the remote areas, in many of the States. Priority to grid extension by the village level leaders as well as by the villagers themselves in many cases also hampers acceptance of the renewable energy systems and hence delays the projects.

1.57 The Committee have been informed that a physical target of 500 villages/hamlets has been set for the year 2011-12 with the financial allocation of Rs. 95 crore. The Ministry in this regard has stated that due to the reasons mentioned above, it appears that States have not been able to identify many more villages which would need to be provided renewable energy systems instead of grid lines. Accordingly, the target for the year 2011-12 has been kept at a moderate level. The States are nevertheless being requested to send proposals if any villages are to be identified.

#### **D. Research, Design and Development in New and Renewable Energy**

1.58 Research and Development activities of the Ministry aim at resource assessment, technology development, demonstration and commercialization. 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 products and systems. A comprehensive policy on RDD&D is a place to support R&D in new and renewable energy sector, including associating and supporting RDD&D carried out by industry for market development.

1.59 Regarding the major Programmes/Research undertaken along with major achievements made under R&D activities during the year 2010-11, the Committee have been informed:

“During the year, Ministry has sanctioned six major R&D projects in solar thermal and PV technology. A National Centre for Photovoltaic Research and Education at IIT-Bombay has been approved. IIM Ahmedabad’s Centre for Innovation Incubation and Entrepreneurship will be developed as a “Centre of Excellence” to help in scouting and mapping, designing, development and piloting of new and innovative ideas in solar and other renewable energy technologies. In addition, the following are some of the important R&D projects under implementation:

- (i) A megawatt scale National Solar Thermal Power Test and Simulation facility is being set up at Ministry’s Solar Energy Centre (SEC) by IIT Bombay and a consortium of Industries. The test facility is aimed at helping in design of solar thermal power projects based on technology parameters and climatic conditions of the locations.
- (ii) An R&D-cum-demonstration project for development of Central Receiver Technology for solar thermal power generation has been sanctioned to a Group led by an Indian industry and comprising scientists from USA, Spain and Switzerland. The project aims to design and develop solar tower with an output of 1 MW thermal energy. The same would be set up at Solar Energy Centre.
- (iii) 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.

- (iv) Development of nano structures thin film dye sensitized solar cell along with capacitor storage by Amrita Centre for Nanoscience, Cochin. The project aims at development of novel storage technique for low power applications. Amrita Centre for Nano science is also identified as a Centre for education in nano solar technologies.
- (v) Development of 15% efficiency thin film CIGS solar cell modules by an industry, leading to setting up of a pilot plant.

In addition, a number of solar thermal and photovoltaic research and demonstration projects are also under implementation in collaboration with other organizations at the Solar Energy Centre. The following activities are also underway:

- (i) Setting up a Centre for Excellence in area of Solar Passive Architecture and Green Building Technologies at CEPT University, Ahmedabad (approved).
- (ii) Technology validation project for industrial process heat system using parabolic trough technology from USA.
- (iii) Long term performance evaluation/testing and training facilities for solar lighting applications at TERI University.
- (iv) Long term performance evaluation/testing and training facilities for megawatt size grid solar PV power at Karnataka Power Corporation Limited, Bangalore.
- (v) Development of organic solar cell materials and devices by Delhi University.
- (vi) Simulation studies on HIT solar cell structure by Indian Association for Cultivation of Science, Jadavpur, Kolkata
- (vii) Development of high efficiency solar thermal air conditioning systems in association with M/s. Thermax.
- (viii) Development of solar concentrating parabolic dish collector technology in association with M/s Megawatt Solutions Pvt. Ltd."

1.60 The Committee enquired as to what are the thrust areas identified for R&D support under new and renewable energy sector for the year 2011-12. The Ministry in a note informed as under:

“The thrust areas for research in new and renewable energy sector have been identified in consultation with academic and R&D institutions, industry and experts. The strategy is to support:

- (i) research at academic and scientific institutions on materials and devices;
- (ii) industry driven research on improving the efficiency of existing processes and developing new product/technologies;
- (iii) technology validation including field evaluation of materials, components and systems;
- (iv) development of centres of excellence to accelerate focused research and analytical capabilities; and
- (v) support for innovation and incubation.”

1.61 The sector specific thrust areas, as furnished by the Ministry are as under:

**SPV:**

- (i) Development of poly silicon material;
- (ii) improvements in efficiency of crystalline silicon solar cells and consumption of less material;
- (iii) development of thin film solar cells using silicon thin films, polycrystalline thin films and cells using dyes, organic and plastic materials and using nano technologies;
- (iv) improvements in efficiency of electronics; and
- (v) development of alternate storage techniques.

**Solar Thermal:**

Solar Thermal power generation Industrial process heat system and other low temperature application including advanced solar collectors and materials.

**Second generation bio-fuels:**

- (i) Ligno-cellulosic ethanol/biobutanol production: Development of multi feed and cost effective pre treatment processes, engineered micro-organism capable of high ethanol yields



and their evaluation, technology for saccharification and fermentation, besides identification and development of strains/processes for bio-butanol.

- (ii) Pyrolysis: Thermo-chemical platform for production of Second Generation Biofuels, such as gasification, Biomass to Liquid, etc.
- (iii) Algal Biofuels: Identification of efficient and engineered strains of algae leading to production of advanced fuels and methods for cultivation and harvesting of micro algae. This also includes drying of algae and conversion into biofuels. This activity will involve elaborate development and scale up both on open ponds and in low cost photo bioreactors.
- (iv) Bio-refinery: Development and demonstration of the concept of bio-refinery

#### **Hydrogen Energy/Fuel Cells:**

Hydrogen production, storage and its utilisation for stationery, motive and portable power generation applications using internal combustion engines and fuel cell technologies.

#### **Wind energy:**

- (i) Power Evacuation Studies for Grid Integrated Wind Energy Conversion System.
- (ii) Study on power quality issues in grid connected wind farms and identification of remedial measures.
- (iii) Wind-Solar-Hybrid system for cost optimization and enhancing the reliability of the systems for catering the rural needs.
- (iv) Health/condition monitoring so as to undertake condition based monitoring with a view to improve the life expectancy of the wind turbines.
- (v) Forecasting of wind energy to ensure large scale integration of wind energy into grid.

1.62 The Committee have been informed that a total allocation of Rs. 95 crore has been made towards R&D Programme for the year

2011-12. The details of thrust areas and corresponding sectoral allocations are as under:

Sl. No.	Programme component	Budget Outlay (in crore)
1.	Bio-Energy	
	b. Biofuel	3.0
	c. Biogas	1.5
	d. Biomass Gasification	0.5
	e. Waste-to-Energy	0.5
	f. Cookstoves	0.5
		6.0
		6
2.	Solar Energy—R&D Activities under Solar Mission	40
3.	Wind Energy	—
4.	Small Hydro Power	1
5.	New Technology:	
	• Hydrogen Energy/Fuel Cells	5.0
	Incl. Hydr. Energy	2.0
	Center at SEC	1.0
	• Tidal Energy	1.0
	• Geo Thermal	9.0
	• BOV	9
6.	Solar Energy Centre (SEC)	30
7.	C-WET	
	• R&D	0.0
	• Wind Resource	3.0
	Assessment	2.0
	• Grant-in-Aid for all other Activities	5.0
		5
8.	NIRE	4
	<b>Total</b>	<b>95</b>

1.63 On being asked about the budgetary allocations both at BE/RE stages *vis-a-vis* actual expenditure made on R&D during the last

three years, the Ministry furnished the following information:

(Rs. in Crore)

2008-09		2009-10			2010-11		
BE	Actual	BE	RE	Actual	BE	RE	Actual (As on 31.1.2011)
100	27.80	75	60.96	58.90	148	123	89.19

1.64 When enquired about the reasons for under-utilization *i.e.* Rs. 95.60 crore (upto 10.03.2011) of the already a meagre allocation of Rs. 148 crore (BE) downsized to Rs. 123 crore for the R&D activities in 2010-11, the Ministry in a written reply stated as follows:

“The actual total expenditure on R&D activities was Rs. 111.40 cr. upto 31.3.2011. Provision of Rs. 65 cr. for R&D in solar energy was utilized fully. Provision of Rs. 37 cr. towards Bio-energy, SHP and MNRE institutions (SEC, CWET and NIRE) was utilized almost fully, with a minor shortfall of Rs.1.5 cr. RE provision of Rs. 15.00 cr. was made for the programmes of Hydrogen Energy, Fuel Cells, Geothermal Energy, Tidal Energy and Battery Operated Vehicles (BOVs). The same was reduced to Rs.11.04 cr. at final re-appropriation stage. The actual utilization was Rs. 7.66 cr. on Hydrogen Energy and Fuel Cells component, Rs. 2 crore on tidal power and Rs. 0.76 crore on BOVs. More expenditure could not be incurred on BOVs as its scheme could be finalized only in November 2010. Funds earmarked for Tidal power could also not be used fully as the Durgadani Tidal power Project was re-tendered due to non-availability of suitable bids.”

1.65 The Committee desired to know about the reasons for reducing the budget from Rs. 148 crore in 2010-11 to Rs. 95 crore for 2011-12, the Ministry informed:

“The allocation for 2011-12 for R&D was reduced due to less allocation of funds by Planning Commission against the proposed outlay. This will be restored when additional funds are received”.

1.66 The Committee further desired to know as to how the Ministry would accomplish their targets with the reduced allocation, the Ministry in a note stated:

“It will not be possible to fully achieve the envisaged goals for R&D with the reduced allocation. With the reduced allocation, the Ministry will have no option but to support lesser number of R&D projects in different thrust areas. The R&D efforts in the

thrust areas of research will continue, specially the ongoing R&D projects, but the reduced allocation would not allow approval of many new R&D projects and delay their approval to next financial year. However, efforts will be made to get additional allocation of funds.”

1.67 On being asked to furnish the details of the tangible achievements made so far in renewable energy arena sequel to R&D efforts, the Ministry submitted as under:

**Biogas:** With the efforts made by the Ministry, biogas purification and bottling technology have been developed. A new technology for family type biogas plant has also been developed in the country on the concept floated by the Ministry which may be similar to washing machine/refrigerator and suitable for treating wet biomass waste in urban areas as well through its installation at household level.

**Small Hydro Power:** The Ministry has recently sanctioned a project to set up a small hydro hydraulic turbine R&D laboratory with an objective of creating international level facilities for testing and certification of hydraulic turbines and hydro mechanical equipments. This project is progressing satisfactorily and the design and details of the proposed laboratory have been finalized.

**Solar Energy:** Development of solar energy technologies in the country and its commercial production is based on indigenous R&D efforts. More recently, the R&D efforts in thin film solar cell technology funded by the Ministry at the Indian Association for Cultivation of Science (IACS), Kolkata have resulted in setting up of a 10 MW annual production capacity manufacturing plant by a company in Bangalore. The efficiency of solar cells in commercial production has also improved progressively to 16% based on the R&D efforts made by the industry. A large number of photovoltaic application (such as solar lanterns, solar home lights, solar street lights, central charging system, foldable modules for battery charging by defence and para military forces, stand alone solar photovoltaic power sources for a wide range of applications) have been developed in the country with domestic research and product development efforts.

**Hydrogen:** As a result of RD&D efforts made in the area of hydrogen energy and fuel cells, laboratory level prototypes of hydrogen fuelled motorcycles, three wheelers, engine-generator sets, PEMFC based power pack and UPS system and water/methanol electrolyzers for hydrogen production have been developed. 10 hydrogen fuelled motorcycles are being demonstrated in the campus of Banaras Hindu University, Varanasi. Hydrogen catalytic combustion cookers have been developed and are undergoing testing.

1.68 Detailing the R&D advancement in renewable energy sector, a representative of MNRE deposited before the Committee as under:

“R&D in solar sector is being carried out on both the technology options. Work is being done on both the options. One is solar photovoltaic route in which electricity is generated from the sunlight and in the second option electricity is generated by using solar heat. I would like to tell you the progress which we have achieved in the electricity generation from solar energy through photovoltaic route. As of now the global production stands at MW and 90 per cent of the same is produced with the use of crystalline Silicon Wafer technology. This comprises a silicon wafer with which solar cells are made and they are being installed in the field. Our country has the production capacity through this technology of 1000 megawatt. The efficiency of the solar cell in the commercial project is 15 to 17 per cent.

The global commercial efficiency of most of the companies comes under this very range. Our companies are also able to export only due to this fact. But persons involved in the research activity have achieved 24 per cent efficiency. At present the thrust area of our research is how to boost up our efficiency, so that the level of efficiency in the commercial production may exceed the level of 20 per cent. We have recently sanctioned a national Centre for Photovoltaic Research and Education in the IIT, Mumbai which have started this work. It will improve the efficiency of crystalline wafer water-based technology of the solar cell, so that the industry may start manufacturing cells upto 20 per cent on that basis. This work is likely to take around three years.

Apart from this, the other technology is thin film technology on which work is being done globally. The thin film technology is also of two types. One is that in which commercial production has been started or the pilot production is under way. The second one is likely to come to such a situation in the next five years in which cost will come down and may be used in production. We are providing research support to both types of technologies. On the lines of other countries 8 per cent efficiency in the commercial production as far as the thin film is concerned. We have a research centre in Kolkata namely Indian Association for Cultivation of Science. The local technology they have developed has been transferred to a Bangalore-based company, Hind High Vacuum. They have started a production plant of 10 MW capacity on the basis of the said technology. Besides one more private sector company has set up a plant in Greater Noida. All these plants are based on new technology...

There is one more thin film technology — Copper Indium Diselenide material. A project to set up a pilot plant of 15 per cent efficiency with this technology has been entrusted to an industry. This project has been entrusted on cost-sharing basis. More than half of money will be invested by the industry and some money will be given by us for purchasing some equipments. It is expected that a pilot plant will be set up in the next two to three years.

Moreover, most important is the next generation technology for which a project to develop solar cell of 12 per cent efficiency has been given to a Kochin based Amrita Nanoscience. The feature of the said solar cells is that they can store energy in the structure of their film. Thus cell and storage can be done simultaneously. This is such an area where cutting edge research work is going on. Global research is also going on at this very level. We have a lot of expectation and if we succeed in this project, it will substantially contribute to cost reduction.

Moreover there are around 37 laboratories of CSIR in the country and out of which 11 laboratories are involved in carrying out research on different aspects solar energy. We are planning to work with them. We have finalized three projects with them. One project is finalized with the National Physical Laboratory which is situated in Delhi. This is for research and development on thin film. Second one has been finalized with the National Chemical Laboratory, Pune and the third one with IICT, Hyderabad. All these projects are related to different aspects of thin film technology.

Besides, Solar projects are being installed for grid power and for off-grid power. Hence, we are starting projects for their long-term evaluation. For example, we have Karnataka Power Corporation Ltd. (KPCL). They have set up two plants — each of 3 MW. Now we have told them to conduct their long-term performance evaluation study, so that course of correction may be carried out to optimize the solar power plants in future.

Secondly, we want to use this very plant for training purposes, as solar power is a new subject to this country. We have shortage of trained manpower. This is medium through which trained manpower can be generated.

In this way, we have entrusted a project for solar lights, solar lanterns and street lights. Long-term performance evaluation of this project should also be done; so that the requirement of maintenance may be reduced to the minimum level and the lights may be made efficient. Sir, the more efficient will we make the electronics, the lesser its cost will be and the requirement of solar module will keep on reducing.

All these efforts we have done during the last few years and I hope that the benefits of these efforts will begin to be reaped in the next phase of the mission.”

1.69 Giving the details of Solar R&D, the Secretary, MNRE briefed the Committee as under:

“... There is no magic bullet in this. What work is being done in India, that is being done globally. Our efficiencies are comparable to the global. Technologies come in two ways — either by somebody who makes investment in this country and if he holds a patent, he will do his own job. It is not that countries are lining up to do collaborations with each other because each one wants to be a leader. Every effort is being made to make collaborations. There is an MoU with the US for collaboration... All the laboratories of the CSIR and the scientists, all the IITs in this country, several other institutions in this country are now all involved in R&D. Several industries have been separately funded; so, it is a far-reaching and a very wide effort for R&D and we have tried to do a lot and whichever institutions or industries are able to do, we have been proposing; we have been inviting proposals; that will be done. Research results would not come in a year; they may take 3-4 years or even more. The funding at Amrita is not for a year; it is for their project; if they achieve certain success, which we hope, they will, they will certainly be entitled and they will certainly get more assistance from us. So, I do not think our effort on R&D is lacking in any degree. Solar power is something for future; the price in India is among the cheapest in the world. The German feed in tariff, the Spanish and the US are one and half or even two times more. The only way to encourage solar power is to help develop the industry and so, higher feed in tariff is a cost which nations are paying for the future. So, this has to happen. The CERC has set up a renewable purchase obligation. The idea is that some compulsory purchase of renewable must be done. The solar that we are talking about will be 0.25 per cent of the energy generated. So, this marginal thing, if it is passed on to the consumer, it means it is one paisa. This is a cost which people have to pay; only with this kind of tariff, will quantities go up; and there will be a chart of increasing quantity and decreasing price. Therefore, the objective is to reach grid parity by 2022. Foreign countries, European countries may reach it earlier because their electricity prices are higher; but that is the effort that is being made. I can assure you that every possible effort from our side is being made and will continue to be made because for the future energy security of this country, solar is going to be critical... America is doing a lot. Our impression is that there are a lot of



younger people and younger laboratories which are now going into research in solar. It is a new movement which has taken off in the US because unlike the earlier ups and downs because of the oil prices movement, this time everybody knows that oil crisis is for real and it is a permanent. Spain is one of the leading solar countries. In the last couple of years, there has been dramatic increases in Spain and Spain is a sunny country. Europe is trying to see what can be done in the desert areas of North Africa and develop solar power there. They are even talking of long-term plans for their evacuation across the Mediterranean into Europe. Germany is the leading country of solar in spite of the Sun not being very good. Now other countries like Italy have taken off. In fact, there is criticism that their feed in tariff is rather high and some East European countries have already started. Japan is a leading country for research in solar PV. China is the leader in the manufacturing because they have their ability to manufacture at low cost and not so much in research. Even South-East Asian countries like Thailand, Malaysia, etc. have started now. South Korea and Taiwan are doing a lot of research and they are also trying to produce low cost power."

1.70 The representative of the MNRE further explained:

"In case of thermal power, we utilize heat to produce steam. By the production of steam, normal turbine runs which then produces power. If we look at the conventional thermal power plant as well as the solar thermal plant, we will find that the only difference is that in the former the boilers produce steam by heating from conventional fuel whereas in the latter, steam is produced by solar energy and remaining entire plant is same. In solar thermal, we have the confidence that turbine runs in case of half of the generation, while so far as the condensers and other things are there we know well about them. The only problem therein pertains to solar collector part where we collect heat & solar radiation in a way to take them to such a level of temperature wherefrom we are able to get useful energy at some good efficiency. So, that is the challenge. It is relatively new area for us. We never had any megawatt plant in the country. Now under Solar Mission, as already told by the Secretary, we are aiming 500 MW plants to be set by 2013, whereas in the world I would just like to tell that the total capacity of such plants installed is 950 MW. So against that 500 MW setting up capacity is quite a challenge. We have already allocated these projects. So that is the commercial aspect.

Now, on R&D the challenge is that we should build the capacity to develop the technology for retaining of the people to indigenous manufacturing. So, these are some key areas. So, we are taking up



setting up of one megawatt test facility at our own Solar Energy Centre in collaboration with IIT, Bombay and a consortium of industries like L&T, Tata Consultancy and Tata Power. That will be operational in the next six months.

There is a different technology which is called the tower technology which is a promising technology because in case of existing technology, there are supply chain bottlenecks. The technology is closely held by only a few companies. That is available only at a price. If you want to go at a much large scale then that is not possible because of the limitation of their capacity. So solar tower is another technology which is being looked at by the world as a potential technology which can provide solution for generation of power through solar thermal route. In this, we have a private company. In that they are working on making it cost effective and working on storage medium also so that power can be produced even after sun-shine. That project will also be implemented at our Solar Energy Centre.

In this second project of solar tower, world's three four best institutes are collaborating in that. There is an American laboratory which is a collaborator in that. There is a Spanish laboratory and then there is one laboratory from Switzerland and of course the Indian Company. They are all working together in this project.

Then India has been working on solar dishes. We have certain capabilities so that dishes have been used for producing steam at low temperatures which means about 150 degree Celsius or so. But for power generation, 300-400 degree temperature is required for which you need better dishes. So, at Mount Abu we have sanctioned a project which is first of its kind in the world where that project will produce steam through solar dishes, it will have thermal storage in the form of some solid mass which is a new experiment in the world. Then it aims to produce power all 24 hours — for eight hours full capacity and 16 hours at 80 per cent of the rated capacity. That project is with German collaboration. Besides that, because indigenous manufacturing is another area which we think that is important to bring down the cost, so about three or four years back we sanctioned a project to National Aeronautics Laboratory, Bangalore, which are very good at developing coatings and they have already developed a coating which can be used for solar thermal power generation applications.

Now, they want to upscale that, we are working with them and that coating is indigenously available. But still there are some issues. The solar tubes which is required to be developed that effort has to be made before we go in for full indigenous production.”

## PART II

### OBSERVATIONS/RECOMMENDATIONS OF THE COMMITTEE

The Committee take note that the Rule 331 G of the Rules of Procedure and Conduct of Business in Lok Sabha relating to examination of Demands for Grants by the Departmentally Related Standing Committees (DRSCs) was suspended by the Hon'ble Speaker, Lok Sabha due to rescheduling of the Financial Business in Lok Sabha to pass the Demands for Grants for the year 2011-12 during the Seventh Session of Fifteenth Lok Sabha without being referred to the concerned DRSCs. However, the Committee have examined the Demands for Grants and made report thereon. Since the Budget for the year 2011-12 has already been passed by the Parliament, the Committee endorse the same. Nevertheless, the Committee feel that the suggestions and recommendations of the Committee would help the Ministry of New and Renewable Energy (MNRE) in analyzing their performance and implementation of various Schemes/Projects during the current year, which happen to be the terminal year of the 11th Plan period. The Observations/Recommendations of the Committee are given in the succeeding paragraphs.

#### 11TH FIVE YEAR PLAN—REVIEW OF PROGRESS

2.2 The Committee note that during the first four years of the 11th Plan, Rs. 2868 crore were actually allocated out of Rs. 4,000 crore budgetary allocation for the entire Plan and an expenditure of Rs. 2449.53 crore was made during these four years. The budgetary allocation for the year 2011-12 is Rs. 1200 crore. Hence, the expenditure made during the previous four years alongwith the outlay for the year 2011-12 together does not meet the financial target for the entire Plan. The total allocation for the 11th Plan *i.e.* Rs. 4,000 crore was itself not a very huge sum. Keeping in view the significance of the sector which are handled by the Ministry, that is, the alternative sources of energy, the non-spending of this sum during the entire Plan reflects on the performance of the Ministry. Even though the Committee were informed that physical and financial performance during the last few years has been very good as compared to earlier years, the Committee feel that with proper planning, due spade work, proper foresight about the achievable target and the available expertise with the Ministry, fund utilisation

under various heads and achievements of the targets could have been still better leading to the benefit of the solar energy to the needy sections of the society. The achievement of the targets under various activities will ease pressure on the conventional systems of energy which are not only scarce but also depleting at a fast pace and are non-renewable. The Committee, therefore, strongly feel that there should be higher allocation for this sector along with the proper planning of the strategy with regard to the implementation of the various programmes being undertaken by the Ministry. They, therefore, recommend that the Ministry should take up with the Planning Commission about higher allocation as there is a befitting case to do so and simultaneously they should stress on proper planning and co-ordination with implementing agencies.

*(Recommendation Sl.No. 1, Para No. 2.2)*

2.3 The Committee note that during the first four years of the 11th Plan, the Ministry have performed well in the field of Small Hydro Power and Biomass co-generation Programme. However, they are not satisfied with the performance of the Ministry under various other Programmes, viz. Remote Village Electrification, Biogas, Wind Power etc. despite occasional good performances. The Committee find that under RVE Programme, the Ministry had set a target for electrification/illumination of 10,000 villages/hamlets during the 11th Plan. However, only 4155 villages/hamlets could be electrified so far, that is, not even 50 per cent of the target could be achieved during the first four years of the Plan. The Ministry have attributed it to the non-receipt of proposals from the State Governments for the poor performance. Similarly, under biogas programme, against the 11th Plan target of 6.78 lakh number of biogas plants, only 4.23 lakh plants could be installed up to February, 2011. Also, under Wind Power Programme against the 11th Plan target of 9000 MW a capacity addition of 7064.35 MW has been achieved during the first four years even when the target was exceeded during the last financial year. The Committee's examination has revealed glaring mismatch between the target set and achieved under various programmes. Consequently a lot of achievements are required to be achieved in the terminal year of the Plan *i.e.* 2011-12. Admittedly the goals envisaged for the 11th Plan under RVEP and Biogas Programme are not likely to be fully achieved. The Committee strongly feel that the shortfall in achievement of targets during 11th Plan is bound to have a cascading effect on the achievement of targets under various programmes/projects of the next Five Year Plan. The Committee, therefore, recommend the Ministry to identify the weak areas on the

basis of their performance during the first four years of the 11th Plan and take specific corrective steps for the terminal year of 11th Plan and ensure that the non- achievement of targets in 11th Plan do not spill over to the 12th Five Year Plan.

*(Recommendation Sl.No. 2, Para No. 2.3)*

#### DEMANDS FOR GRANTS OF MNRE FOR 2011-12

2.4 The Committee note that the budget outlay of Rs. 4,000 crore was made for the 11th Five Year Plan, against which the actual allocation made during the first four years of the Plan is Rs. 2868 crores while Rs. 2449.53 crore were utilized which is about 85 per cent of the allocated amount. For the annual plan 2011-12 an amount of Rs. 1,200 crore has been allocated against the total requirement of 2275 crore (Rs. 1325 crore for Solar Mission component and Rs. 950 crore for other programmes). Despite a hike of 20 per cent over last year allocation, the Budget requirement for the Solar Mission has not been taken into consideration. The target of Internal and Extra Budgetary Resources (IEBR) for the year has also been kept at Rs. 1050 crore *vis-a-vis* Rs. 1496.65 crore during 2010-11. The Committee find that Revised Outlay for several important components like wind power and solar power has been reduced without altering the proposed target. Similarly, outlay under off-grid solar applications has been substantially cut down alongwith the target. Areas like solar water heating have not been allocated any sum at all. The detailed analysis of proposed targets and outlay along with the revised targets and allocation reflect incoherence in the planning and execution of the different projects of the Ministry. Keeping in view the past performance of the Ministry in previous four years of the Plan, and the planning of current year's programmes, it is really inconceivable to achieve the revised targets without adequate allocation. The substantial reduction in the off-grid solar applications reflects upon the unrealistic approach and planning. The Committee are apprehensive as to how the Ministry would be able to achieve the targets of the 11th Plan which were left to be completed during the last year of the Plan, that too, a large percentage of the total Plan targets without commensurate allocation of funds. The Committee, therefore, strongly recommend that the planning of the various programmes of the Ministry along with the proposed outlay must synchronise with the actual and achievable target commensurate with the revised outlay leaving lesser scope for any drastic reduction or alteration of any of the important components of the various projects/programmes of the Ministry.

*(Recommendation Sl.No. 3, Para No. 2.4)*

2.5 The Committee note that the financial and physical performance for the year 2010-11 has been satisfactory. Against an outlay of Rs. 1,000 crore an amount of Rs. 980 crore was spent on various programmes. Achievement in the Wind Power, Small Hydro, Bio-power are encouraging while areas like waste to power both Grid and Off-grid, Water Mills and Gasifiers needs special attention. The Committee express their satisfaction over achievements in areas such as Wind Power, Small Hydro and Bagasse Co-generation where physical targets have been exceeded. However, the Committee also note that the areas where targets have been over-achieved during the last year require reassessment for setting appropriate targets for future. The infrastructure and expertise which are available for this project also require technological upgradation. The current target of 2400 MW for wind power for the year 2011-12 is uninspiring in the context of the achievement of 2350 MW during the year 2010-11. Similarly, the targets for Small Hydro, Bio-power also need to be revisited as they have been already fixed for the current year. The Committee are confident and sure that these targets will be achieved and would create a precedent/milestone especially keeping in view the past performance in these sectors. In view of the foregoing, the Committee strongly recommend that rational higher targets be fixed for this year in areas where last years' achievements are more than the targets set. Higher outlay, if need be, may be proposed for approval from Planning Commission as this is going to ease the pressure on conventional energy resources while creating environment for basic development of the country.

*(Recommendation Sl.No. 4, Para No. 2.5)*

#### NATIONAL SOLAR MISSION

2.6 The Committee note that the Jawahar Lal Nehru Solar Mission was started in the year 2010-11 with the objective of establishing India as a global leader in solar energy. The mission aims at achieving 20,000 MW of grid power, 2,000 MW of off-grid solar applications and 20 million sq.m. solar thermal collector area. The mission is to be implemented in three phases. For the first phase of the mission, which is to be completed by March, 2013, a target was fixed to set up 1100 MW grid connected solar plants, including 100 MW capacity plants as roof tops and other small solar power plants. Besides, a target of 200 MWeq., off-grid solar applications and cumulative 7 million sq.m. solar thermal collector area by March, 2013 was also fixed. A budget of Rs. 4337 crore has been approved for these projects which are envisaged to be completed in the first phase. The Committee find that an amount of Rs. 286 crore (approx.) was allocated during 2010-11 for Solar Mission and an

amount of Rs. 485 crore is allocated for the year 2011-12 *i.e.* Rs. 55 crore for grid power and Rs. 430 crore for off-grid. That way a huge amount of more than Rs. 3,500 crore remains unallocated for the terminal year of the first phase of the Mission. The Committee feel that the year-wise allocation of the approved amount for the first phase is not only highly disproportionate but also lacks practical wisdom, more so as the MNRE had proposed for Rs. 1200 crore for 2011-12 while they were actually allocated only Rs. 485 crore. The poor allocation will certainly affect the pace of achievement of the target in the first phase. The Committee observe that the Ministry had performed at par with the financial resources available with them during the beginning year of 2010-11 spending almost entire amount of Rs. 286 crore under both grid and off-grid programmes. As regards physical achievements, sanctions given by the Ministry also exceeded the target during the year. Moreover, the Ministry were able to commission 26.59 MW in grid power and 10.63 MWeq. in off-grid in 2010-11. In view of the physical targets set by the Ministry for the year 2011-12 for sanction of 300 MW capacity and completion of 200 MW under grid power and sanction of 32 MWeq. and completion of 20 MWeq. under off-grid alongwith 0.6 mln.sq.m. collector area of solar thermal, the Committee feel that even if the targets for the year 2011-12 are achieved *in toto*, it is definitely a difficult task for the Ministry to achieve their original target of first phase both under grid and off-grid programmes. Though the Ministry may easily sanction the requisite capacity projects, but in the absence of a proper strategy for time bound execution of all the projects, first phase targets will be a herculean task to achieve. The ambitious Jawahar Lal Nehru Solar Mission, therefore, appears to be crumbling in the beginning itself. The Committee, therefore, strongly recommend that a detailed and practicable strategy be put in place and proper plan be prepared before the sanctioning of the projects under this mission. A time-bound completion of the projects should also be ensured failing which some penal provisions may be appended as the solar mission has the great potential and promising future for the country and no laxity can be allowed to creep into the successful implementation of the mission. If it is felt that participation of Private Sector will enhance the pace, adequate steps should be taken to involve them so that they play a significant role in expediting development of solar energy. The Committee would also like the Ministry to approach the Ministry of Finance to allocate more funds as initially demanded, at the time of revised estimates so that smooth and time bound implementation of the projects can be ensured and that work is not suffered for want of funds.

*(Recommendation Sl.No. 5, Para No. 2.6)*



## WIND ENERGY PROGRAMME

2.7 The Committee observe that the cumulative physical achievement under wind energy programme during the first four years of the 11th Plan (upto March, 2011) is 7063.35 MW against a target of 10500 MW (reduced to 9000 MW at Mid-term Appraisal stage) and could spend around Rs. 79.17 crore against BE of Rs. 113.6 crore and RE of Rs. 85.1 crore. Hence, a capacity addition of 1937 MW is required to be achieved in 2011-12 to meet the reduced 11th Plan target of 9000 MW. Although the position during 2008-09 and 2009-10 were not satisfactory, the Committee are happy to note that the physical achievement during 2010-11 have surpassed the targets. In view of this, the Committee trust that the Ministry with their sincere effort would easily achieve the physical target of 2400 MW set for the year 2011-12 thereby surpassing the reduced 11th Plan target of 9000 MW. The Committee are aware that the Ministry do not play a direct role in capacity addition of wind energy. However, the Committee are of the opinion that the Ministry can play a pivotal role in providing a solid base, conducive atmosphere and favourable opportunity for private sector investment in order to boost the growth of the wind energy sector. The Committee also feel the need for upgradation of the technology in Wind Energy Sector, especially in development of design of wind turbines and indigenization of wind electric generator. In view of the foregoing, the Committee recommend that the Ministry should play a proactive role in conducting a survey for identifying the potential of the sector particularly in the coastal area, play the role of a catalyst in the promotion of the sector making it an investor friendly venture. Besides, the Ministry may strengthen their monitoring system not only to achieve the 11th Plan target but also initiate action plan for the next Five Year Plan in order to generate more power from wind energy.

*(Recommendation Sl.No. 6, Para No. 2.7)*

## REMOTE VILLAGE ELECTRIFICATION PROGRAMME (RVEP)

2.8 The Committee note that the Remote Village Electrification Programme (RVEP) of the Ministry aims to provide lighting/electricity using renewable energy in those remote unelectrified villages and hamlets where grid connectivity will not be feasible in near future. The Committee observe that against the 11th Plan target for electrification/illumination of 10,000 villages/hamlets under RVE Programme, as on 28th February, 2011, 4810 villages/hamlets have been electrified and work is under implementation in 3354 villages/hamlets. The Committee have been informed that a total of 782 villages and hamlets for which support was sanctioned earlier

by the Ministry have been dropped by the State implementing agencies and expect a higher number at the time of final settlement of accounts. The main reason for dropping the sanctioned villages has been the preference of the villages for grid electrification under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). Further, delays in identification and earmarking of villages and hamlets to be covered through renewable energy systems not being electrified by grid extension under RGGVY has always been one of the factors highlighted by the Ministry for the poor and delayed implementation of the RVE Programme. It has also come to the notice of the Committee that there is avoidable delay in electrification of villages under RGGVY as no specific time schedule is fixed for such an exercise. While the Committee appreciate the extension of grid connectivity for electrification of the remote rural areas through RGGVY, at the same time, they express concern over the inordinate delay in implementation of the RVE Programme, apparently due to the poor coordination between the implementing agencies. This delay results not only in non-achievement of targets but deprive the end-users in the remote areas of their basic requirement for electricity. For faster and effective implementation of the Programme, the Committee recommend that the MNRE in consultation with Ministry of Power may set up a Co-ordination Committee consisting of representatives from various implementing agencies at the required level which will facilitate and monitor implementation of the two programmes under RGGVY and RVEP specifically in identification of villages and hamlets which will be covered under the respective programmes. Moreover, a practicable time frame should be prescribed for electrification of villages under RGGVY, if these are not covered under RVE and Co-ordination Committee should be kept informed about each villages being electrified under the specific scheme as also specific schedule should be spelt out clearly. The Committee would like to be apprised about specific action taken in this regard.

*(Recommendation Sl.No. 7, Para No. 2.8)*

## RESEARCH, DESIGN AND DEVELOPMENT IN NEW AND RENEWABLE ENERGY

2.9 The Committee feel that Research & Development activities of the Ministry aim at resource assessment, technology development, demonstration and commercialization of new and renewable energy projects. The Committee have been highlighting the importance of Research and Development for the development and progress for all the renewable energy sources such as wind, solar, hydro, bio-gas etc. They observe that the expenditure pattern under RD&D for the last two years have improved. In the year 2008-09, against the BE of Rs. 100 crore for R&D, the Ministry could spend only Rs. 27.80 crore.



However, in the year 2009-10 and 2010-11, the Ministry could utilize Rs. 58.90 crore and Rs. 111.40 crore against the budget allocation of Rs. 60.96 crore (RE) & Rs. 123 crore (RE) respectively *i.e.* more than 90 per cent. The Committee are satisfied with the progressive improvement of the utilization of funds in R&D Sector over the years, yet it is difficult to understand the considerable reduction in budgetary allocation to Rs. 95 crore in 2011-12 as compared to the BE of Rs. 148 crore in 2010-11 under this head, particularly when the Ministry were able to spend as much as Rs. 111 crore in 2010-11. There is no apparent reason put forward by the Government for such an unacceptable reduction of allocation for this important sector. The Ministry have admitted themselves that it would not be possible to fully achieve the envisaged goals for R&D with the reduced allocation. It will also affect the commencement of new R&D Projects causing unwarranted delay in implementation of the whole R&D Plan. The Committee observe that the Ministry have been able to work out the thrust areas minutely and have made considerable progress in achievement of the physical targets set by them. The Ministry must have made a proper and practical assessment of the progress made so far and requirement of funds for the future before seeking an amount of Rs. 208 crore for the year 2011-12 for R&D. The Committee feel that the R&D Sector of new and renewable energy is in its nascent stage and requires special care and proper nurturing. Any reduction of financial allocation at this stage may hamper the progress of various R&D Projects at whatever stage of implementation they are. The Committee, therefore, recommend that the Ministry should persuade the Planning Commission/Ministry of Finance to have the requisite fund for R&D Sector for the current year so that uninterrupted and smooth implementation of all the R&D Projects can be ensured and new projects can be initiated without any delay. Thrust areas in Research and Development should *inter-alia* include work of Photovoltaic technology as it has great potential with regard to its usage, investment *vis-a-vis* its end results. This will certainly boost the development of new and renewable energy sector. Further, close monitoring of all the R&D projects should be ensured with a view to evaluate their functioning in a result-oriented manner.

*(Recommendation Sl.No. 8, Para No. 2.9)*

NEW DELHI;  
25 July, 2011  

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03 Sravana, 1933 (Saka)

MULAYAM SINGH YADAV,  
Chairman,  
Standing Committee on Energy.

(vide para No. 1.9 of the Report)

**Consolidated programme-wise details of Financial Allocations and expenditure during first 4 years of 11th Plan and Approved Outlay for 2011-12**

Sl.No.	Programme Component	2007-08		2008-09		2009-10		2010-11		2011-12		Total	
		Outlay (BE)	Exp. (BE)	Outlay (BE)	Exp. (BE)	Outlay (BE)	Exp. (BE)	Outlay (BE)	Exp. (BE)	Outlay (BE)	Exp. (BE)	Outlay (BE)	Exp. (BE)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Grid-Interactive & Distributed Renewable Power	110	87.92	150	116.20	220	200.88	545	533.01	754	—	1779	938.01
2.	Renewable Energy for Rural Applications	200	190.29	160	151.19	155	152.42	170	199.17	225	—	910	693.07
3.	Renewable Energy for Urban, Industrial and Commercial Applications	80	22.22	26	16.55	75	64.72	25	36.88	10	—	216	140.37

4	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	4.	Research, Design & Development in Renewable Energy	60	31.74	100	27.80	78	59.47	148	111.40	95	—	481	230.41
	5.	Supporting programmes	178	146.55	184	130.04	92	71.34	112	99.74	116	—	682	447.67
		<b>Total Gross Budgetary Support (GBS)</b>	<b>628</b>	<b>478.72</b>	<b>620</b>	<b>441.78</b>	<b>620</b>	<b>548.83</b>	<b>1000*</b>	<b>980.20</b>	<b>1200*</b>	<b>—</b>	<b>4068*</b>	<b>2449.53</b>

\*Includes funds for Jawaharlal Nehru National Solar Mission.

(vide para No.1.9 of the Report)

DETAILED PROGRAMME/SYSTEM-WISE FINANCIAL ALLOCATIONS AND  
EXPENDITURE DURING FIRST 4 YEARS OF 11TH PLAN

Sl.No.	Programme/system	2007-08		2008-09		2009-10		2010-11	
		BE/RE	Expd.	BE/RE	Expd.	BE/RE	Expd.	BE/RE	Expd.
1	2	3	4	5	6	7	8	9	10
<b>GRID POWER</b>									
1.	Wind Power	22.90/ 15.50	16.06	22.40/ 19.90	13.51	20.30/ 14.80	14.70	48.00/ 34.90	34.90
2.	Small Hydro	45/ 45	44.95	53.50/ 78.50	78.49	100/ 100	99.93	135/ 135	134.99
3.	Bio Power								
4.	Bagasse Co-generation	30/19	13.72	28/18	10.12	29.90/ 29.90	29.90	30/ 33.80	33.80
5.	Waste to Power (WTP)	9/9	6.74	25.5/ 13.55	10.81	11.8/ 8.8	3.50	12/ 11.5	11.42
6.	Solar Power	18/4.5	0.93	19.5/0.50	0.40	11/8.99	8.99	30/30	29.94

1	2	3	4	5	6	7	8	9	10
<b>OFF-GRID</b>									
7.	Waste to Power	Included under grid WTP projects				10.2/ 6.15	5.78	20/ 12.5	12.42
8.	Non-bag Cogeneration	9/ 9.52	9.52	7.25/ 7.40	6.59	7/ 10.03	10.03	7/ 11.65	11.64
9.	Gasifiers	3.75/ 3.25	3.16	3/ 2.5	2.32	5/4	3.95	5/4.5	4.54
10.	Aero-Gens/Hybrid systems	2.50/4.90	4.90	5/4.90	5.50	5/3.90	3.83	5/2.50	1.52
11.	SPV Plants+Street Lights	29.50/ 60.75	55.47	62.75/ 67.35	62.45	92.70/ 84.50	80.85	227.49/ 254.99	254.27
12.	Water Mills (WMs)/Micro/ mini-hydel plants	4/4	3.97	3/3	2.91	4/4	4.00	10/10	9.99
<b>RENEWABLE ENERGY FOR RURAL APPLICATIONS</b>									
13.	Remote Village Electrification Programme	143/ 133	133	80/88	88	80/ 82.85	82.85	80/80	79.25
14.	Family type biogas plants	36/56	55.90	63/57	56.99	63/68.15	68.15	90/120	120

1	2	3	4	5	6	7	8	9	10
<b>RENEWABLE ENERGY FOR URBAN, INDUSTRIAL &amp; COMMERCIAL APPLICATIONS</b>									
15.	Solar water heating	57.90/ 18.00	18	24.50/ 15.00	13.97	10/ 10	8.12	15/ 30	30
16.	Energy-efficient buildings	13.00/ 3.81	3.93	4.5/ 3	2.00	5/ 5	4.40	10/ 7	6.88
17.	Other Solar Thermal systems and Solar Cities								

(vide Para No.1.9 of the Report)

## PHYSICAL TARGETS AND ACHIEVEMENT DURING FIRST 4 YEARS OF 11TH PLAN

Sl.No.	Programme/System	2007-08		2008-09		2009-10		2010-11		
		Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.	
1	2	3	4	5	6	7	8	9	10	
<b>GRID POWER (Capacities in MW)</b>										
1.	Wind Power	1500.00	1663.50	2000.00	1485.50	2500.00	1565.00	2000	2350.35	
2.	Small Hydro	200.00	204.75	250.00	248.93	300.00	305.27	300	307.22	
3.	Bio Power	275.00	81.00	300.00	97.50	405.00	158.30	455	143.50	
4.	Bagasse Co-generation		185.00		247.90		289.00		321.50	
5.	Waste to Power									
	Urban	2.00	-	5.00		14	4.72		-	
	Indstl.	10.00	11.72	8.00	5.06	10.00		17.00	7.50	
6.	Solar Power									
				14.00		2.00	8.15	200	806	
									(sanctioned)	
									26.59	
									(commiss- ioned)	
Total		1987.00	2145.97	2577.00	2084.89	3226.00	2330.44	2972	3156.66	

1	2	3	4	5	6	7	8	9	10
<b>OFF-GRID (Capacities in MWeq)</b>									
7.	Waste to Power	Urban	3.00	5.00			-		-
		Indstl.	5.00	7.00	7.36	10.00	15.88	13	23.70
8.	Non-bag. Cogen.		20.00	30.00	75.77	50.00	50.00	75	80.73
9.	Gasifiers	Rural	1.00	1.00	1.03	3.00	1.08	4.00	1.37
		Indstl.	10.00	10.00	13.20	10.00	11.08	15.00	9.00
10.	Aero-Gens/Hybrid systems		0.15	0.30	0.11	0.30	0.22	0.50	0.05
11.	SPV systems		-	-	2.59	5.00	9.18	32.00 (sanct- ioned)	40 (sanct- ioned) 10.63 (commiss- ioned)
12.	Water Mills (WMs)/ Micro/mini-hydel plants		-	-	0.70 (339 nos. WMs)	-	1.72 (447 nos. WMs)	2.50	2.20 (444 nos.)
Total			39.15	53.30	99.17	78.30	83.56	142.00	127.68



	1	2	3	4	5	6	7	8	9	10
<b>DECENTRALISED RENEWABLE ENERGY SYSTEMS AND OTHER PROGRAMMES</b>										
13.	Remote Village Electrification (Nos. of Villages+ Hamlets)	2000	1992	1500	636	1500	1431	1500	1454	
			Sanct- ioned/ 1280		Sanct- ioned/ 325		Sanct- ioned/ 1013		Sanct- ioned/ 1537	
			comp- leted		comp- leted		comp- leted		comp- leted	
14.	Family type Biogas Plants (No. in Lakh)	1.00	0.89	1.24	1.08	1.50	1.20	1.50	1.51	
15.	Solar Water Heating— collector area (Million sq. meter)	0.60	0.45	0.60	0.56	0.60	0.62	1.00	1.00	

MW = Megawatt; MWeq = Megawatt equivalent; kW = kilowatt, kWp = kilowatt peak; sq.m. = square meter.

(Vide Para No. 1.23 of the Report)

**Demands for Grants 2011-2012****MINISTRY OF NEW AND RENEWABLE ENERGY**

DEMAND No. 68

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

Major Head	Budget 2010-2011		Revised 2010-2011		Budget 2011-2012				
	Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan			
	Total	Total	Total	Total	Total	Total			
1	2	3	4	5	6	7	8	9	10
Revenue	944.70	10.50	955.20	941.15	13.50	954.65	1132.50	14.38	1146.88
Capital	53.30	—	53.30	53.30	—	53.30	65.50	—	65.50
Total	998.00	10.50	1008.50	994.45	13.50	1007.95	1198.00	14.38	1212.38
1. Secretariat-Economic Services New and Renewable Energy	13.40	9.50	22.90	11.90	12.50	24.40	15.00	13.38	28.38

	1	2	3	4	5	6	7	8	9	10
2. Grid Interactive and Distributed Renewable Power	2810	452.00	—	452.00	442.90	—	442.90	664.00	—	664.00
3. Renewable Energy for Rural Applications	2810	143.00	—	143.00	162.00	—	162.00	176.00	—	176.00
	3601	20.00	—	20.00	21.00	—	21.00	19.00	—	19.00
Total		163.00	—	163.00	183.00	—	183.00	195.00	—	195.00
4. Renewable Energy for Urban, Industrial and Commercial Applications	2810	25.00	—	25.00	37.00	—	37.00	10.00	—	10.00
5. Research, Design & Development in Renewable Energy	2810	144.70	—	144.70	119.70	—	119.70	77.50	—	77.50
	4810	3.30	—	3.30	3.30	—	3.30	15.50	—	15.50
Total		148.00	—	148.00	123.00	—	123.00	93.00	—	93.00
6. Supporting Programmes										
6.01 External Support (EAP)	2810	3.00	—	3.00	3.00	—	3.00	6.00	—	6.00
6.02 Domestic Support	2810	42.60	1.00	43.60	42.65	1.00	43.65	44.50	1.00	45.50
Total-Supporting Programmes		45.60	1.00	46.60	45.65	1.00	46.65	50.50	1.00	51.50

	1	2	3	4	5	6	7	8	9	10
7. Other Expenditure	2810	0.10	—	0.10	0.10	—	0.10	0.10	—	0.10
3601		0.90	—	0.90	0.90	—	0.90	0.40	—	0.40
Total		1.00	—	1.00	1.00	—	1.00	0.50	—	0.50
8. Investment in Public Enterprises	4810	50.00	—	50.00	50.00	—	50.00	50.00	—	50.00
<b>Total-New and Renewable Energy</b>		884.60	1.00	885.60	882.55	1.00	883.55	1063.00	1.00	1064.00
9. Lumpsum Provision for N.E. Region & Sikkim	2552	100.00	—	100.00	100.00	—	100.00	120.00	—	120.00
10. Actual Recoveries	2810	—	—	—	—	—	—	—	—	—
<b>Grand Total</b>		998.00	10.50	1008.50	994.45	13.50	1007.95	1198.00	14.38	1212.38
<b>B. Investment in Public Enterprises</b>										
8.01 Indian Renewable Energy Development Agency	12810	50.00	950.00	1000.00	50.00	1496.65	1546.65	50.00	950.00	1000.00
Total		50.00	950.00	1000.00	50.00	1496.65	1546.65	50.00	950.00	1000.00
<b>C. Plan Outlay*</b>										
1. New and Renewable Energy	12810	900.00	950.00	1850.00	895.00	1496.65	2391.51	1080.00	950.00	2030.00
2. North Eastern Areas	22552	100.00	—	100.00	100.00	—	100.00	120.00	—	120.00
Total		1000.00	950.00	1950.00	995.00	1496.65	2491.65	1200.00	950.00	2150.00
*Inclusive of works outlay In the Ministry of Urban Development										
Demand No. 102	12810	2.00	—	2.001	0.55	—	0.55	2.00	—	2.00

(vide para 1.25 of the Report)

## BUDGETARY ALLOCATION FOR FINANCIAL YEAR 2011-12

Sl.No.	Programme Component	Proposed Target	Proposed Outlay	Revised Target	Revised outlay
1	2	3	4	5	6
<b>(A)</b>	<b>Grid-interactive</b>				
1.	Wind Power	2400	50	2400	33
2.	Small Hydro Power	350	142	350	135
3.	Solar power	300 (sanction)	100	200-completion (300-sanction)	55
4.	Biomass Power (Combustion)	200	15	150	10
	Biomass Power (Gasification)	20	10	10	6
	Bagasse Cogeneration	300	25	300	23
	Urban and Industrial Waste to Energy	30	27	25	22
	Sub-total (A)	3600 MW	369	3535 MW	284

1	2	3	4	5	6
<b>(B)</b>	<b>Off-Grid/DRPS</b>				
1.	Solar applications	68 (sanction) 32 (completion) 1 mln. sq.m.	1100 (300 ST)	32( sanction) 20 (completion) 0.6 mln. sqm.	430
2.	Energy from Urban/Industrial Wastes Energy from Agricultural/Rural Wastes	15	6011	15	11
3.	Non Bagasse Cogeneration in Industry	80	12	80	12
4.	Biomass Gasifiers-Rural electrifn./ Rice Mills	6 MW-100 villages 20 MW-250 rice mills	6 6	3 MW-50 villages 15 MW-100 rice mills	8
5.	Water mills with Generators	1.5 MW-500 nos.	10	1 MW-400 nos.	4
6.	Aero-generators/Hybrid systems	0.5	7	0.50	5
	Sub-Total (B)	155 MW 1 mln.sq.m.	1252	134.50 MW 0.6 mln. sq.m.	470
	<b>Renewable Energy for Rural Applications</b>				
1.	For remote villages/hamlets Remote Village Electrification Programme	500 villages/ hamlets	95	500 villages/ hamlets	95

1	2	3	4	5	6
2.	For all villages: Family type biogas plants	0.30 mln.cum. (1.5 lakh plants)	165	0.30 mln.cum. (1.5 lakh plants)	130
	Total	225	260		225
	<b>Renewable Energy for Urban, Industrial and Commercial Applications</b>				
	Solar water heating! thermal systems	1 mln. sq.m.	300*	0.6 mln. sq.m.	*
	Energy-efficient buildings	5 mln. sq.m.	9	5 mln. sq.m.	10 Solar
	Solar Cities	25 Cities- Master plans	26		
	Total				10

\*Included in Off-Grid provision for Solar Applications.

**RESEARCH, DESIGN AND DEVELOPMENT IN RENEWABLE ENERGY**

Sl.No.	Programme component	Proposed outlay	Total Revised outlay
1	2	3	4
1.	Bio-Energy		
	a. Bio-fuel	15.0	3.0
	b. Biogas	17.0	1.5
	c. Biomass Gasification	1.0	0.5
	d. Waste-to-Energy	1.0	0.5
	e. Cookstoves	2.0	0.5
		<hr/>	<hr/>
		36.0	6.0
		36	6
2.	Solar Energy—R&D Activities under Solar Mission	75	40
3.	Wind Energy	Included in CWET	—
4.	Small Hydro Power	8	1
5.	New Technology:		
	• Hydrogen Energy /Fuel Cells Incl. Hydr. Energy Center at SEC	15.0	5.0



	1	2	3	4
		<ul style="list-style-type: none"> <li>• Tidal Energy</li> <li>• Geo Thermal</li> <li>• BOV</li> </ul>	9.0 1.0 5.0 <hr/> 30.0 30	2.0 1.0 1.0 <hr/> 9.0 9
6.	Solar Energy Centre (SEC)		40	30
7.	C-WET			
	<ul style="list-style-type: none"> <li>• R&amp;D</li> <li>• Wind Resource Assessment</li> <li>• Grant-in-Aid for all other Activities</li> </ul>	2.0 5.0 8.0 <hr/> 15.0 15		0.0 3.0 2.0 <hr/> 5.0 5
8.	NIRE		4	4
	Total		208	95

### SUPPORT PROGRAMMES

Sl.No.	Programme component	Proposed outlay	Revised outlay
1.	Information and Publicity Programmes (incl. SADP)	35	30
2	International Relations	6	5
3.	HRD & Training	27	6
4.	Monitoring & Evaluation Other Studies including those under Solar mission	3	2
5.	Plan Secretariat (Administration)	15	15
6.	Information technology, e-Governance and other Initiatives	11	1
7.	IREDA Equity	105	50
8.	Support to Industries	7	0.5
9.	Outstanding liabilities of 10th Plan	1	0.5
	Total	210	110
	EXTERNALLY AIDED PROJECTS (EAP)	6	6

ANNEXURE VI

MINUTES OF THE NINTH SITTING OF THE STANDING  
COMMITTEE ON ENERGY (2010-11) HELD ON  
18TH APRIL, 2011 IN COMMITTEE ROOM 'B'  
PARLIAMENT HOUSE ANNEXE,  
NEW DELHI

The Committee met from 1500 hrs. to 1640 hrs.

PRESENT

Shri Mulayam Singh Yadav—*Chairman*

MEMBERS

*Lok Sabha*

2. Shri P.C. Chacko
3. Shri Ram Sundar Das
4. Shri Paban Singh Ghatowar
5. Shri Shripad Yesso Naik
6. Shri Sanjay Nirupam
7. Shri Jagdambika Pal
8. Shri Ravindra Kumar Pandey
9. Shri M.B. Rajesh
10. Shri Ganesh Singh
11. Shri Vijay Inder Singla

*Rajya Sabha*

12. Shri Govindrao Adik
13. Shri V.P. Singh Badnore
14. Smt. Shobhana Bhartia
15. Shri Ram Chandra Khuntia
16. Shri Bhagat Singh Koshyari
17. Shri Mohammad Shafi
18. Shri Motilal Vora

SECRETARIAT

1. Shri Brahm Dutt — *Joint Secretary*
2. Smt. Abha Singh Yaduvanshi — *Director*
3. Shri N.K. Pandey — *Additional Director*
4. Shri Rajesh Ranjan Kumar — *Deputy Secretary*

REPRESENTATIVES OF THE MINISTRY OF NEW AND  
RENEWABLE ENERGY

Sl.No.	Name	Designation
1.	Shri Deepak Gupta	Secretary
2.	Shri R. Bhattacharya	AS&F
3.	Shri Shashi Shekhar	Joint Secretary
4.	Dr. N.P Singh	Scientist 'G'
5.	Dr. B. Bandyopadhyay	Scientist 'G'
6.	Dr. A.R. Shukla	Scientist 'G'
7.	Shri D. Majumdar	CMD, IREDA

2. At the outset, the Chairman welcomed the Members of the Committee and the representatives of the Ministry of New and Renewable Energy (MNRE) to the sitting of the Committee and emphasized the growing importance of New and Renewable Energy Sector. He also apprised the representatives of the Ministry of the provision of Directions 55(i) and 58 of the Directions by the Speaker.

3. Thereafter, the Secretary, MNRE briefed the Committee on the Demands for Grants (2011-12) particularly w.r.t. their targets *vis-a-vis* achievements under various programmes during the first four years of the 11th Plan and targets for 2011-12 *i.e.* terminal year of the Plan.

4. The Committee *inter alia* discussed with the representatives of the Ministry of New and Renewable Energy the following important points:-

- (i) Low utilization of funds/low achievement of targets by the Ministry, particularly during first four years of 11th Five Year Plan.
- (ii) Programme-wise outlay *vis-a-vis* actual expenditure of the Ministry for the year 2010-11.

- (iii) Performance of the Ministry under Grid-Interactive and off-grid Renewable Power Programme including National Solar Mission, Wind Energy, Small Hydro Projects, Biomass, Biogas besides Remote Village Electrification Programme and Renewable Energy Programmes in North-East Region, etc.
- (iv) Need for greater emphasis on Research and Development activities in Renewables.
- (v) Requirement of funds for the various programmes of the Ministry during the year 2011-12 and actual allocation made thereto. The Members sought clarifications on various issues relating to the subject which were responded to by the representatives of the Ministry. The Committee directed the representatives of the Ministry to furnish written replies to the queries which could not be replied during the sitting.

5. A verbatim record of the proceedings of the sitting of the Committee has been kept.

*The Committee then adjourned.*

ANNEXURE VII

MINUTES OF THE THIRTEENTH SITTING OF THE STANDING  
COMMITTEE ON ENERGY (2010-11) HELD ON 27TH JUNE, 2011  
IN COMMITTEE ROOM 'C' PARLIAMENT HOUSE ANNEXE,  
NEW DELHI

The Committee met from 1100 hrs. to 1245 hrs.

PRESENT

Shri Mulayam Singh Yadav—*Chairman*

MEMBERS

*Lok Sabha*

2. Shri P.C. Chacko
3. Shri Adhir Ranjan Chowdhury
4. Shri Ram Sundar Das
5. Shri Paban Singh Ghatowar
6. Shri Chandrakant B. Khaire
7. Shri Jagdambika Pal
8. Shri Ravindra Kumar Pandey
9. Shri Nityananda Pradhan
10. Shri M.B. Rajesh
11. Shri Ganesh Singh
12. Shri Radha Mohan Singh
13. Shri E.G. Sugavanam

*Rajya Sabha*

14. Shri Govindrao Adik
15. Shri V.P. Singh Badnore
16. Shri Shyamal Chakraborty
17. Shri Ram Chandra Khuntia
18. Shri Bhagat Singh Koshyari
19. Shri Jesudasu Seelam
20. Shri Mohammad Shafi
21. Shri Motilal Vora
22. Shri Veer Pal Singh Yadav

