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STANDING COMMITTEE ON ENERGY (2009-2010)

FIFTEENTH LOK SABHA

MINISTRY OF NEW AND RENEWABLE ENERGY

DEMANDS FOR GRANTS (2009-2010)

SECOND REPORT

LOK SABHA SECRETARIAT
NEW DELHI

December, 2009/*Agrahayana*, 1931 (*Saka*)

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(2009-2010)

Presented to Lok Sabha on 17.12.2009
Laid in Rajya Sabha on 17.12.2009

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*Passed Away on 6th November, 2009.

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this Second Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2009-10.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 6th October, 2009. The Committee wish to thank 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 (2009-10).

3. The Committee considered and adopted the Report at their sitting held on 14th December, 2009.

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;
December 16, 2009
Agrahayana 25, 1931 *(Saka)*

MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy.

REPORT

PART I

NARRATION ANALYSIS

I. INTRODUCTORY

The Department of Non-Conventional Energy Sources (DNES) was set up in 1982 and was subsequently, in 1992, upgraded into full-fledged scientific Ministry. Since October, 2006, it has been re-christened as Ministry of New and Renewable Energy (MNRE). MNRE is the nodal Ministry of the Government of India at the national level for all matters relating to new and renewable energy such as solar, wind, biomass, small hydro, hydrogen, geothermal etc. The endeavor of the Ministry is to promote renewable energy technologies and increase the contribution of renewable energy in the total energy mix in the years to come. The Ministry 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. India has reportedly been pursuing a three-fold strategy for promotion of renewable; (a) providing budgetary support for research, development and demonstration of technologies; (b) facilitating institutional finance through various financial institutions; and (c) promoting private investment through fiscal incentives, tax holidays, depreciation allowance and remunerative returns for power fed into the grid.

2. Under the Allocation of Business Rules, the MNRE has been allocated the following subjects/business:

(i) Research and Development of bio-gas and programmes relating to bio-gas units.

(ii) Solar Energy – including photovoltaic devices and their development, production and applications.

(iii) All matters relating to small/mini/micro hydel projects of and below 25 MW capacity.

(iv) Indian Renewable Energy Development Agency.

(v) Research and development of other non–conventional/ renewable sources of energy and programmes relating thereto.

(vi) Tidal Energy.

(vii) Geo-thermal energy.

(viii) National policy on Bio-fuels; Research.

- Development and demonstration on transport, stationary and other application of bio-fuels;
- Setting up of a National Bio-fuel Development Board and strengthening the existing institutional mechanism; and
- Overall coordination concerning bio-fuels.

3. Asked about the initiatives taken by the Ministry, the Committee were informed that the major initiatives include:—

(i) To expand the scheme on Generation-based incentive to cover all wind power projects to be set up during the remaining 11th Plan period.

(ii) An Integrated package in entrepreneurial mode on medium size (200-1000) cum./day) biogas-fertilizer plants for generation, purification/enrichment, bottling and piped distribution of biogas for meeting cooking, heating, stationary and motive power, cooking, refrigeration and electricity generation.

(iii) A new scheme on 'Development of Solar on Green Cities; to encourage and assist Urban Local Bodies (ULBs) in assessing their present energy consumption States.

(iv) To set up grid connected solar PV Plants of 25 KW to 1000 KWP at the tail end of the grid to provide power and improve the quality of power in the grid. Also a new demonstration programme, permitting utilities, generation companies and State nodal agencies.

II. IMPLEMENTATION STATUS OF THE OBSERVATIONS/ RECOMMENDATIONS OF THE COMMITTEE CONTAINED IN THE TWENTY-SIXTH REPORT (FOURTEENTH LOK SABHA) ON DEMANDS FOR GRANTS (2008-09) OF THE MINISTRY OF NEW AND RENEWABLE ENERGY

4. The Standing Committee on Energy presented their 26th Report (Fourteenth Lok Sabha) on Demands for Grants of the Ministry of New and Renewable Energy for the year 2008-09 on 22nd April, 2008. The Report contained 35 Observations/Recommendations. In

compliance of Direction 73-A of the Directions by the Speaker, the Minister of New and Renewable Energy made a statement in Lok Sabha on 19th December, 2008 giving the status of implementation of the Recommendations made by the Committee in their 26th Report (Fourteenth Lok Sabha). As per the Minister's statement, all the recommendations contained in the 26th Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2008-09 were accepted by the Government which were under different stages of implementation. Based on the Action Taken replies received from the Ministry of New and Renewable Energy on the above mentioned Report, the Committee presented their 28th Action Taken Report (Fourteenth Lok Sabha) to the Houses on 13th February, 2009. In their 28th Action Taken Report, the Committee brought out that out of the 35 Observations/Recommendations contained in the 26th Report, 26 Observations/Recommendations were accepted by the Government. The Committee did not desire to pursue 1 recommendation as the reply given by the Government was considered satisfactory. The replies of the Government in respect of 8 Recommendations were not accepted by the Committee and these were reiterated for implementation by the Government.

5. The areas related to these 8 recommendations are:

(i) Finalisation of the roadmap for long-term energy security and energy independence in a fixed time.

(ii) Achievement of targets under Wind Energy Programme.

(iii) Indentification of projects by different States under Solar Power Programme and MW Scale demonstration project to be set up in the Solar Energy Centre, Gurgaon.

(iv) Follow up and maintenance mechanism for solar devices.

(v) R&D strategy for Solar Energy Sector.

(vi) SHP Development Programme.

(vii) Remote Village Electrification Programme.

(viii) District Advisory Committees.

Some of the above areas have been further reviewed and analysed and are discussed in subsequent paras.

III. PERSPECTIVE PLANNING OF RENEWABLE ENERGY (11TH PLAN PROGRAMMES)

6. According to the Ministry of New and Renewable Energy, the aim for grid-interactive renewable power capacity addition during the

11th Plan is 14,000 MW. By the end of the 11th Plan, renewable power capacity is likely to reach 24,000 MW in a total capacity of 2,00,000 MW accounting for 12 per cent and contributing around 5 per cent to the then electricity-mix. Regarding the 11th Plan outlay and various programmes/schemes of the Ministry of New and Renewable Energy, the Additional Secretary during the evidence pronounced as under:—

> "For the Eleventh Plan period, the total outlay for the Ministry has been decided to be of the order of Rs. 10,243 crore. It includes a Gross Budgetary Support, the Direct Budgetary Support of Rs. 4000 crore and the rest Rs. 6243 crore is to be from the Internal and Extra Budgetary Resources (IEBR).
>
> Our major thrust areas and programmes as per the approach outlined in the Ministry's Eleventh Plan proposal are as follows. Firstly, there is grid-interactive and distributed renewable power which includes grid-interactive and distributed renewable power capacity addition from wind power, from small hydro, from solar and from biomass. Then there is renewable energy for rural applications which consists of Remote Village Electrification (RVE), provision for Solar Photo Voltaic (SPV) lighting and other systems in remote villages and hamlets and also biogas plants. Then there is renewable energy for urban, industrial and commercial applications consisting of deployment of solar thermal systems for water heating, biomass based captive power in industry, urban and industrial wastes to energy, rooftop solar PV systems, green buildings and green cities. There is also a very large component of research, design and development which is supporting R&D activities on different aspects of new and renewable energy applications and technologies".

7. Details of physical and financial targets set during the 11th plan are as follows:

A. Physical targets:

Renewable Power:

- Grid –interactive renewable power plants : 14,000 MW
- Distributed Renewable Power systems : 1,000 MW

Urban Industrial & Commercial Applications:

- Solar thermal systems/devices : 5 million. m^2 collector area.
- Grid-interactive/off-grid power projects based on biomass (non-bagasse), and U&I wastes included under renewable power above.

Rural Applications:

- Remote Village Electrification : 9000 villages
- VES Projects : 1000 remote villages/hamlets
- Non-electrical RE systems : All 10,000 villages under RVE &VESP
- Solar thermal systems: Flat plate collectors for hot water : 1.0 million m^2
  - Cooking & drying applications : 0.5 million m^2
  - Concentrating type cooker applications : 0.1 million m^2
- Biogas Plants
  - Family type for cooking applications : 2 million m^3

B. Approved budget provision:

	Rs. in crore
• Grid-Interactive & Distributed Renewable Power	1,000
• Renewable Energy for Rural Applications	1,105
• Renewable Energy for UIC Applications	252
• Research, Design & Development	635
• Supporting Programmes	895
• Spill-Over Liabilities	35
	3,922
• Externally aided projects	78
Total:	4,000

8. The programme-wise break-up of approved outlay(GBS) and expenditure during first three years (upto 31st July, 2009) of 11th Plan is shown at ***Annexure-I.*** Details of targets and achievements up to 31st July, 2009 of 11th Plan period are also given at ***Annexure-II.***

9. During 11th Plan, the Ministry of New and Renewable Energy got a total budget provision of Rs. 4000 crore out of which Rs. 1062.99 crore has been spent upto 31st July, 2009. As far as physical performance is concerned, in Grid-Interactive Power Programme, achievement is about 4659 MW till 31st July, 2009 against the 11th

plan target of 14000MW. Further, in Off-Grid sector 177.13 MWeq has been achieved against the total target of 1000 MWeq. Total potential, targets *vis-à-vis* achievements made so far under Grid-Interactive Renewable Power are as under:

Source	Estimated Potential (in MWeq)	Cumulative Achievements as on 30.09.2009	Target for 11th Plan	Achievement made during 11th Plan upto 30.09.2009
Wind Power	48,500	10,528	10,500	3,435
Small Hydro (upto 25MW)	14,000	2,467	1400	491
Biomass Power	16,700	797	1700	272
Bagasse Cogeneration	5,000	1,165		549
Waste to Power	3,800	63	400	19
Solar Power	*	3	50	1
Total (excl. Solar)	88,000	15,023	14,050	4,767

10. Asked about the non-achievement both in financial and physical terms during the first half of the 11th Plan, the Ministry in a note have stated that there was set-back in the implementation of various schemes/programmes during 2007-08 and 2008-09 due to following factors:

(i) There were issues relating to continuation of programmes/ schemes from 10th plant to 11th plan linked with indepth evaluation of schmes/programmes in line with MoF guidelines on the subject.

(ii) There was change in approval mechanism for Ministry's schemes/programmes to EFC mechanism from approvals given by CASE. The latter system was followed since the formation of the Ministry/Department in 1982 but was discontinued from the 11th plan as per Cabinet decision.

(iii) There was need to restructure the schemes within the framework of the 11th Plan proposals which was approved by the NDC only in December 2007."

11. On being asked as to whether the proposed outlay for new and renewable energy sector for the 11th Plan period is sufficient for

achieving the goals set by the Ministry, the Committee were informed as under:—

> "The major activities in the field of Renewable Energy are being driven by private investment. The budgetary support of Rs. 4,000 crore should be about sufficient for achieving the targets set for the 11th Plan period as far as private sector led grid-connected projects are concerned, although there may be some additional requirements which would be evaluated during Mid-term Appraisal. However, additional allocation would be required under the National Solar Mission."

IV. ANALYSIS OF DEMANDS FOR GRANTS OF MNRE FOR 2009-10

12. The MNRE presented to Parliament Demand No. 67 for the financial year 2009-10 on 10th July, 2009. The Plan and Non-Plan provisions made in the Revenue and the Capital Sections of the Budget are as under:-

Demand No. 67

(Rs. in crore)

	Plan	Non-Plan	Total
Revenue Section	597.20	11.00	608.20
Capital	19.80	-	19.80
Grand Total (Revenue + Capital)	617.00	11.00	628.00

13. A Statement showing the details of the Budget Estimates for the year 2009-10 *vis-à-vis* that of Budget Estimates/Revised Estimates (BE/RE) of 2008-09 is given at ***Annexure-III***.

14. The total outlay of the Ministry for the financial year 2009-10 is Rs. 1346.78 crore. Out of this, the Internal and Extra Budgetary Resources (IEBR) constitutes Rs. 726.78 crore and Gross Budgetary Support (GBS) accounts for Rs. 620 crore. The Committee have been informed that GBS to the tune of Rs. 710 crore was proposed by the Ministry. The GBS approved by the Planning Commission and sanctioned by the Ministry of Finance is Rs. 620 crore.

15. The Annual Plan Outlay including Budgetary Support and Internal and Extra Budgetary Resources (IEBR), for the last three years with BE/RE and Actuals break-up are shown below:

(Rs. in crore)

	2006-07			2007-08			2008-09		
	BE	RE	Actual	BE	RE	Actual	BE	RE	Actual
GBS	597	380	379.27	626	483	478.72	617	499.40	441.79
IEBR	528.31	802.66	862.24	537.40	798.37	800.76	798.16	798.16	958.52
TotalOutlay	1125.31	1182.66	1241.51	1163.40	1281.37	1279.48	1415.16	1297.56	1400.31

16. When asked about the reasons for not utilizing the GBS fully, the Ministry of New and Renewable Energy have informed as under:—

> "While there does exist huge potential for renewable energy in the country, the utilization thereof is constrained by the generally higher initial costs of renewable energy projects in comparison to conventional energy projects. The projects are being implemented mostly in private sector and the Ministry only facilitates the same by providing various fiscal and financial incentives. Ministry is also dependent upon the State Nodal Agencies for implementation of programmes."

17. Asked about the various steps taken by the Ministry to ensure full utilization of Budgeted amount earmarked for the year 2009-10, the Ministry stated:

> "During 2009-10, the Ministry is focusing on rigorous monitoring of the progress under various programmes as per the new structure that has been put in place right from the beginning with clarity. It is also holding periodic review meetings with different state agencies/stake holders to ensure a uniform and maximum utilization of the funds by the third quarter for avoiding undesirable rush of expenditure toward the close of financial year and the ministry is confident that the budgeted amount earmarked at the initial stage (BE) will be expended."

18. The Ministry have further stated that an expenditure of Rs. 260 crore has already been incurred upto 30.09.2009 which is over 42% of the allocated BE of Rs. 620 crore. It has been planned that 2/3rd of the BE provision will get utilized by 31.12.2009 and efforts are being made to utilize the balance 1/3rd by 31.03.2010. The Ministry

have, however, added that the expenditure is mostly dependent on the performance utilization of funds by the State Nodal Agencies which are responsible for implementation of various schemes/programmes in their respective States as also private sector projects for various subsidies on which there is no control. Nevertheless, the Addl. Secretary of the Ministry assured during the evidence as under:

> "The flow of expenditure during the current year has been very good in the beginning and therefore it is according to the ideal phasing of the Ministry of Finance. So we are confident that the entire Budget provision of Rs. 617 crore would be utilized by the end of the financial year".

19. The actual utilization of budgeted allocation, quarter-wise, during the period 2006-07 to 2009-10 (upto 1st quarter) as furnished by the Ministry is given in the following table:

(Rs. in crore)

Year	BE	RE	Ist Qtr.	IInd Qtr.	IIIrd Qtr.	IVth Qtr.	Total
2006-07	597.00	380.00	36.72	64.92	49.65	227.98	379.27
2007-08	626.00	483.00	63.45	47.90	174.24	193.13	478.72
2008-09	617.00	499.40	15.63	168.78	106.24	151.14	441.79
2009-10	620.00	—	108.60	—	—	—	108.60

20. During the course of examination the Committee pointed out that the expenditure during first two quarters has been very low and enquired as to why the expenditure was not evenly spread during a financial year, the Ministry in a written reply stated:

> "The funds are released in instalments linked with the physical and financial progress as per the norms specified in the Administrative Approvals of the respective schemes/programmes. A prime pre-requisite in this regard is utilization certificates on prescribed format in respect of funds released in past. These norms are strictly followed without exception. The attempt is to meet the norms set by the Finance Ministry for quarter-wise expenditure. There has been decline in the 4th quarter expenditure over the years and improvement in this regard in the last year regarding expenditure in the first two quarters."

21. The Committee further enquired about the reasons for lowering funds at RE stage. According to the Ministry, the Finance Ministry imposed cuts on the plan expenditure during the last three years reducing the BE provisions at the RE level and the main reason for cut was less expenditure during the first two quarters of the respective financial years. In this context, when the Committee asked whether the Ministry do not feel the need for better planning to ensure timely utilization of funds, the Ministry agreed the Committee's view in the matter.

22. Asked further as to why the Ministry failed to project realistic targets at BE stage, the Ministry in a written note stated:

> "Majority of the programmes are implemented by the State Governments, Departments or designated State Nodal Agencies and are dependent upon receipt of proposals from them over which the Ministry have no control. Only approximate targets aiming at higher physical achievements than in past are set, with corresponding increase in BE provisions."

23. On being asked about the action plan of the Ministry to motivate non-performing States and persuade the States/UTs which have shown lack of interest in the renewable sector, the Ministry in a written reply stated:

> "It is submitted that already transfer of financial resources from this Ministry to States is linked to performance therein. No State-wise allocations are made in advance. All out efforts are being made to promote various renewable energy programmes in all States/UTs through increased private sector participation. Funds are released to States only when utilization certificates for previous releases have been made."

V. MAJOR PROGRAMMES UNDER GRID INTERACTIVE AND OFF-GRID RENEWABLE POWER

24. Grid interactive renewable power generated from wind, small hydro, bio-mass and solar energy projects is fed to the grid. In addition, distributed/decentralized renewable power projects using small wind energy and hybrid systems, biomass energy and small hydro power/watermills are being established in the country under off-grid power programme to meet the energy requirements of isolated locations at decentralized locations in the country.

25. The detailed break up of the total allocation for different Schemes/Projects (Grid Interactive and Off-Grid) *vis-à-vis* physical targets during the year 2009-10 as furnished by the Ministry, is as under:

Scheme	B.E. (Rs. in crore)	Physical Targets (MW)
Grid Interactive		
Wind Power	7	2500
Small Hydro	100	300
Biomass Power/Co-gen	30	400
Urban & Industrial Waste to Power	12	15
Solar Power	11	4
Total Grid Power	160	3,219
Off Grid Renewable Power/DRPS		
Wind Solar Hybrid	5.00	0.30
Watermills	4.00	17.50
Bio-Power	21.00	73.00
SPV Power	30.00	5.00
Total Off-Grid Power	60.00	95.80
Grand Total	220.00	3314.80

26. Against the Budget provision of Rs. 220 crore for the year 2009-10 under Grid Interactive and Off Grid Distributed Renewable Power the Ministry could spend Rs. 76.72 crore upto 31st July, 2009 and the break-up of physical progress as furnished by the Ministry are as under:

Sl. No.	Programme/System	Target	Ach.
1	2	3	4
GRID POWER (Capacities in MW)			
1.	Wind Power	2500.00	222.00
2.	Small Hydro	300.00	31.00
3.	Bio Power	405.00	70.00

1	2		3	4
4.	Biomass Cogeneration			106.00
5.	Waste to Power	Urban	15.00	
		Industrial		
6.	Solar Power		4.00	
OFF GRID (Capacities in MWeq)				
7.	Waste to power	Urban Industrial	10.00	
8.	Non-bag Cogen		50.00	5.00
9.	Gasifiers	Rural	3.00	0.06
		Industrial	10.00	1.50
10.	Aero-Gens/Hybrid Systems		0.30	
11.	SPV Plants +Street Lights		5.00	
12.	Water Mills (WMs)/Micro/ mini-hydel plants		17.50	1.75 (19 Nos. WMs)
			95.80	6.56

A. Wind Power Programme

27. According to the Ministry, the wind power potential has been estimated to be about 48,500 MW taking sites having wind power density greater than 200W/sq. The overall achievement has been 10,528 MW as on 30.09.2009. The target for 11th Five Year Plan is stated to be 10,500 MW, of which 3549 MW has been achieved. The target for the year 2009-10 is 2,500 MW and the achievement till 30.09.2009 is 400 MW. The budget allocated under Wind Power Programme for the current year is only Rs. 7 crore.

28. When asked about the reasons for reduction of BE upto Rs. 7 crore for the current financial year as compared to BE of Rs. 21 crore in 2007-08 and that of 22.25 crore in 2008-09, the Ministry stated that in the previous year, the budget estimates for wind energy programme included the budgetary support for the Centre for Wind Energy Technology. During 2009-10, the budget allocation of Rs. 8.4 crore for C-WET has been included separately under a different budget head for "Research Institutions/Centres". Combining these two

items, the budget estimate for wind energy is comparable to that of the previous years.

29. The Budget Estimates, Revised Estimates, expenditure incurred and target achievements under the Wind Energy Programme during the two financial years are given below:

Sl. No.	Year	BE (Rs. in crore)	RE (Rs. in crore)	Expenditure (Rs. in crore)	Target (MW)	Achievement (MW)
1.	2007-08	21.00	15.50	16.07	1500	1663.5
2.	2008-09	22.25	19.50	14.20	2000	1485.50

30. On being asked about the reasons for variation between BE/RE in respect of these financial years, the Ministry have stated that the provision for demonstration wind power projects was modified and limited to those States only, where commercial development has not been initiated. Therefore, new proposals under demonstration wind power projects received from States such as Madhya Pradesh, Maharashtra and Andhra Pradesh could not be supported. During 2008-09, there was no expenditure on the demonstration phase of GBI. Further, the budgetary provision of Rs. 9 crore for C-WET was reduced at the RE stage to Rs. 5 crore as the proposal for acquisition of experimental wind turbine could not be finalized due to limited offers from the wind turbine manufacturers.

31. The Committee desired to know the action plan of the Ministry to overcome the hurdles so as to ensure full utilization of the allocated funds during 2009-10. The Ministry in a written note stated as under:—

> "The poor response from the manufacturers was mainly due to the requirement of information in the tender relating to IPR related issues of their turbines. The matter was examined in detail by the Technical Committee set up by C-WET along with various wind turbine manufacturers to finalise revised terms. Based on this, fresh tenders were invited in June 2009 and the bids have been opened by the end of Sept. 2009. C-WET has placed order for procurement of experimental wind turbine.
>
> As regards generation based incentives, the Ministry has formulated a proposal to provide the generation based incentives along with the existing incentive of accelerated depreciation on a mutually exclusive manner. The proposal is under consideration of the Government As funds can be released after the approval of the scheme, the provision made for the purpose has been re-appropriated to other schemes under Grid Connected Renewable Power."

32. The Committee further desired to know as to what specific steps are being taken/proposed to be taken by the Ministry to ensure that the targeted capacity of 2500 MW is achieved during 2009-10. The Ministry in a note stated:

"The target of 3224 MW for grid connected power *inter alia* includes 2500 MW from wind. The target of 2500 MW was initially kept while formulating the 11th Plan Period, taking into account the targetted capacity addition of 10,500 MW in wind sector during the 11th Plan period. It was also assumed that favourable private sector investment condition will continue along with conducive regulatory environment in all wind potential States. The impact on investments because of the financial melt-down and uncertainty caused by clarity in tariff policy in some of the States such as Tamil Nadu, Andhra Pradesh and Gujarat for the past year has slowed down capacity addition in wind sector, The Ministry on its part has formulated a generation based incentive to broaden the investment base by attracting independent power producers and foreign direct investment. It is seen that the investment is picking up in wind sector together with announcement of higher tariff for wind power, in the States of Tamil Nadu, Gujarat, Andhra Pradesh and Rajasthan. Further, Central Electricity Regulatory Commission (CERC) has announced guidelines for fixing remunerative and preferential tariff for renewable power including wind power. The generation based incentive is also expected to be available for wind power during the current year. These factors would be helpful for achieving higher capacity addition in Wind Power. However, States must sort out issues of land and clearances.

While all efforts are being made to sustain the growth of wind sector, the wind power capacity addition during the 11th Plan has been scaled down to 9,000 MW instead of 10,500 MW at the time of mid-term appraisal of the 11th Plan.

There is no direct relationship between the budget allocation and the capacity addition in wind sector as this is entirely achieved through private sector investment. The Government do not provide any capital subsidy or any direct financial incentive for setting up wind power projects. The Government support is in terms of fiscal incentives, such as 80% accelerated depreciation in the first year and tax holiday for a period of 10 years for the profits generated from the sale of electricity for wind power projects. Budget allocation is utilized to support the Centre for Wind Energy Technology and continue the Wind Resource Assessment in unexplored areas etc."

33. According to the Ministry, the budget estimates under wind energy are towards supporting wind resource assessment, demonstration projects and for activities of Centre for Wind Energy Technology. The steps taken to utilize the budget in full includes: (a) finalization of proposals on Wind Resource Assessment in North-Eastern Region and other States, (b) Experimental Wind Turbine and R&D projects to be carried out and coordinated by C-WET, and (c) Generation Based Incentives (GBI) Scheme for wind power projects.

34. Regarding development of strategy paper by the C-WET on co-ordinated R&D Programme on the identified thrust areas in the wind energy sector, the Ministry in a note informed as under:

> "(i) 17 proposals were received for blade, hybrid, gears, grid connection, HRD, condition monitoring and mast/tower from Amrita school Engg., Anna Unuiversity, CIT, Coimbatore, ProSIM, and RMK Engineering, TEDA, IIT, Chennai.
>
> (ii) The proposals were scrutinized by concerned sub-groups and 13 proposals short-listed for further consideration by Expert Group and R&D council. Of these the following 3 projects have been finalized for sanction by C-WET for implementation:
>
> - *Wind Battery Charger* by RMK Engineering College, Kavaraipettai, Thiruvallur Distt., Chennai
> - *Study on Power Quality issues in grid connected wind farms and identification of remedial measures* by RMK Engineering College, Kavaraipettai, Chennai/TEDA/Amrita School of Engineering, Coimbatore/C-WET
>
> Power Evacuation Studies for grid integrated wind energy conversion system by Department of Electrical and Electronic Engineering College of Engineering Anna University, Chennai."

35. The Committee further desired to know about the level of indigenization of imported equipment required for the development of Wind Energy in the country. The Ministry in their written reply provided the following information:

> "Current production of WEGs in the country is largely based on licensed technology. The level of indigenization is about 80% in smaller capacity wind turbines upto 500-600 kW, whereas it is about 50% in larger wind turbines. Wind turbine technology has changed very rapidly internationally. Therefore, efforts made by the Ministry for indigenization of wind turbines have not been successful up to the level of product development. Private sector R&D efforts are generally centered around development of low

cost, high quality replacements for imports and vendor development. This has resulted in the availability of higher capacity machines in the country with larger rotor diameter, higher hub height, improved blade alignment, better power electronics etc. Wind turbine manufacturing capacities have been established in the country in private sector, including component manufacturing for gear boxes, generators, controllers, blades, yaw components using imported patented components. Government's R&D efforts are towards improved wind resource assessment technologies, and development of micro-siting guidelines leading to optimum wind farm design methodologies for Indian terrain conditions etc."

36. On R&D Budget for Wind Energy sector, the Committee were informed that a total amount of about Rs. 2.40 crore was spent by C-WET during the 10th Plan. An allocation of Rs. 635 crore has been made for Research, Design and Development on Renewable Energy Sector during the 11th Plan Period including for Wind Energy. Amount of Rs. 5.06 crore and Rs. 0.27 crore were spent on R&D activities during 2007-08 and 2008-09 respectively. During the year 2009-10, the budget earmarked for R&D activities for wind energy is Rs. 5 crore within the overall allocation of Rs. 8.40 crore to C-WET.

37. The Committee enquired about the perspective plan of the Ministry for utilization of allotted amount on R&D during the current financial year 2009-10, the Ministry stated as under:

"The broad areas to be focused are wind turbine components, integration of turbine with grid, research on wind resource assessment, wind prediction tool, off-shore measurement, new and alternate material for construction, wind hybrid systems, design and manufacturing methodologies etc. Specific research & project ideas from all stakeholders in wind energy, including manufacturers, power utilities etc. were solicited. C-WET will be coordinating RD&D projects. The response received so far are not adequate for formulating a comprehensive R&D programme aiming at competitive products development. R&D Council asked C-WET to get the involvement of the premier R&D institutions like IITs, IISc, CSIR Labs etc. on long term research on specific projects in a coordinated manner."

38. The Committee enquired about the latest position in regard to preparation of Wind Atlas for the country which was to be finalized by September, 2009. The Ministry stated in a post-evidence reply submitted to the Committee as under:—

"The micro scale modeling by C-WET using numerical model and real time measurements have been completed. The Meso scale modeling for generating generalized wind climate for large domain size has also been competed by RISO National Laboratory, Denmark,

who is the collaborating laboratory for the project. The validation of the results for fine tuning for different regions is in progress. A small delay has occurred due to the need for extensive validation of both the models in some of the selected regions. The Wind Atlas is expected to be completed by the end of 2009."

39. The Plant Load Factor (PLF) of wind energy in the country is reported to be only 21%. On a specific query why the country is not able to improve the PLF above 21%, the Ministry stated that Capacity Utilization Factor (CUF) of wind power projects depends on many factors such as the location, size and capacity of the wind turbine, availability of grid, variation in wind speed etc. While 21% is the average CUF, there are locations in the country which have recorded CUF as high as 35%. The electricity generated by the wind turbines is supplied to the grid owned by the utility/transmission company.

B. Small Hydro Power Programme

40. The Committee have been informed that the estimated potential for Small Hydro Power (SHP) generation (upto 25 MW capacity) in the country is reported to be about 15,000 MW. A total of 5415 potential sites with an aggregate capacity of 14,292 MW have been identified. The total installed capacity of SHP in the country, according to the Ministry is 2502.24 MW from 682 projects. The State-wise details of SHP sites identified alongwith Projects Installed and under implementation, as furnished by the Ministry is shown at ***Annexure-IV***.

41. According to the Ministry, the target of 1400 MW capacity addition has been fixed from the SHP projects during the 11th Plan period. The aim of the Ministry is to add about 3000 MW from SHP projects during the 12th Plan. The targets and achievements during the first two years of the 11th Plan are as follows:

Year	Physical(MW)		Financial (Rs. in crore)		
	Target	Achievement	BE	RE	Expenditure
11th Plan	1400 MW	478.68 (as on 15.7.2009)	700.00		191.55 (as on 15.7.2009)
2007-08	200 MW	204.75 MW	50.00	50.00	49.95
2008-09	250 MW	248.93 MW	57.50	82.50	82.47
2009-10	300 MW	25 MW (as on 15.7.2009)	107.00		59.13 (as on 15.7.2009)

42. On being pointed out by the Committee that the budget allocations have been on lower side, the Ministry have informed that during 2008-09, the budget for SHP programme was enhanced from Rs. 57.50 crore to Rs. 82.50 crore at RE stage to meet the financial requirement of the project on 'Electrification/Illumination of border villages of Arunachal Pradesh' started in November 2008 after approval of CCEA and in accordance with the announcement by the Prime Minister during visit to the State in February 2008. Since there was no budget provision for the project in the Annual Plan of 2008-09, additional funds were requested at the RE stage to take up various activities of the project.

43. When asked about the allocation made exclusively for the Border village Electrification Project, the Ministry have informed as under:

> "An allocation of Rs. 65.00 crore has been made for the year 2009-10 for the border village electrification project in Arunachal Pradesh. Against this, an amount of Rs. 53.93 crore has been released to implementing agencies and technical institution.
>
> Out of 1058 villages proposed to be covered under the project by December, 2011, 580 villages are targeted to be electrified/ illuminated during 2009-10. So far 517 villages have been illuminated through SPV home lighting systems and 32 villages have been electrified from small/micro hydel projects.""

44. Regarding other States, the Ministry stated that the physical target of Capacity Addition from States other than Arunachal Pradesh is 275 MW and the financial allocation is of Rs. 42 crore. Against this, capacity addition of 72 MW has been achieved and an expenditure of Rs. 14.46 crore has been incurred. The Ministry have expected that physical and financial targets will be achieved under the SHP programme.

45. The Committee desired to know the action plan of the Ministry for full utilization of Budget allocation for the SHP programme during the current year. The Ministry in a note submitted as under:

> Capacity addition of 72.47 MW has been achieved till 30th September 2009. Based on schedules of completion of existing SHP projects in public and private sector, following capacity addition is expected:

Capacity Addition during 2009-10- Actual/Expected (in MW)

April–June (Actual)	July-Sept. (Actual)	Oct.-Dec. (Expected)	Jan.-March (Expected)	Total
25 MW	47.47 MW	71.00	165.00	308

As part of action plan to achieve the target for 2009-10, the Ministry is closely monitoring implementation of SHP projects including those allotted to the private sector in the potential States including Himachal Pradesh, Uttaranchal, Karnataka etc.. Secretary, MNRE has taken meetings with the State Government Officials and SHP developers to expedite implementation of SHP projects. The Minister (NRE) has written to the Chief Ministers of Himachal Pradesh, Uttaranchal, J&K, Arunachal Pradesh, Sikkim, and Mizoram regarding faster implementation of projects. Secretary, MNRE has also written to the Chief Secretaries of potential States to closely monitor implementation of projects."

46. Asked about the development of SHP projects, the representative of the Ministry during the evidence deposed as under:

"…Hydel Power sites have been identified. You are aware that this work is done by private developers. In this case the main problem is, as you too have stated, relatively less attention is paid towards those hydel sites which have less than 25 MW capacity because work on much more big projects is going on. But now a days in the clusters of most of the villages in hilly areas 100 KW micro hydel projects can be executed because these areas are less populated. This Ministry had formulated a scheme six months ago whereunder subsidy at the rate of Rs. 1 lakh per KW was provided which means almost 90 per cent subsidy. In Uttarakhand we have already received 100 micro hydel projects and 1500 water mills projects. In such cases it has been decided that instead of giving subsidy for these projects they should be asked to undertake these projects as a mission and projects. We have received so many projects of this type. The Prime Minister had visited Arunachal Pradesh in January 2008. There the work is going on to electrify one thousand fifty eight villages with solar photovoltaic and small hydro power and this is being done as a mission. We also had talks with the Sikkim Government. The Chief Minister of Sikkin met our Minister and desired setting up a small micro hydels in his State in a projectise way. In this regard a project is very likely to be received from them.

47. Asked about the thrust areas that have been identified for R&D by the Ministry in the field of SHP programme and the major achievement, the Ministry stated:

> "SHP is by and large a mature technology. Improvements, however, have been effected in control systems and automation, including remotes control. With increasing number of SHP projects coming up, requirement of institutional support to provide technical back-up is felt. The Ministry has been supporting institutions to meet technical demand of the sector and organizing training programmes on various aspects of SHP project development. Alternate Hydro Energy Centre (AHEC) at IIT Roorkee has been developed as apex technical institution to provide all services including design, performance testing and training. Towards this, country's first Real time digital SHP simulator, on-site testing facilities have been created. For small size projects, standardization of size and equipments have been done."

C. Biomass Power and Cogeneration Programme

48. As per the Annual Report of the Ministry of New and Renewable Energy, the availability of biomass in India is estimated at about 540 million tonnes per year covering residues from agriculture, forestry and plantations. By using the surplus agricultural residues, more than 16,000 MW of grid quality power can be generated with presently available technologies. In addition, about 5,000 MW of power can be produced, if all the 550 sugar mills in the country switch over to modern technologies of co-generation. Thus the estimated biomass power potential is about 21,000 MW. The cumulative biomass power/ bagasse cogeneration based power capacity has reached 1752 MW, which comprises 703 MW of biomass power projects and 1049 MW of bagasse cogeneration projects.

49. For the 11th Plan period, the physical and financial targets under this programme are 1700 MW and Rs. 130 crore respectively. Details of the targets and achievements made under the Biomass Power and bagasse and non-bagasse cogeneration during the first two years of the 11th Plan are given below:

PHYSICAL (MW)

Programme	Eleventh Plan			
	2007-08		2008-09	
	Target	Ach.	Target	Ach.
Biomass Power/cogeneration Programme	250	266	300	345
Biomass Energy and Cogeneration (non-bagasse) in Industry	30	61.82	40	88.97

FINANCIAL (Rupees in crore)

Programme	Eleventh Plan			
	2007-08		2008-09	
	BE/RE	Ach.	BE/RE	Ach.
Biomass Power/cogeneration Programme	38.90/19.0 (28.90 for BPCP)	13.72	40.30/18.0 (28.00 for BPCP)	10.12
Biomass Energy and Cogeneration (non-bagasse) in Industry	12.75/12.75	11.79	10.00/9.00	7.95

50. The Ministry have attributed the variations in financial achievement during the last two years to the following factors:

a. A one time capital subsidy scheme was introduced during December 2006. The new scheme provides for the capital subsidy to be released after commissioning and performance evaluation of the project. The quantum of CFA works out to be Rs. 10-15 lakhs/MW on a declining scale which is about 1.5-2% of the total project cost. As per the provisions of the scheme, the project developer is required to follow various national/international standards applicable to respective technologies and the CFA is to be released after the project is commissioned and its independent performance evaluation at a minimum of 80% of its rated capacity for three months. The promoters of biomass power projects have not shown interest to avail the capital subsidy which works out to be about 2% of the project cost.

b. The bagasse cogeneration projects in private sector sugar mills avail fiscal incentives and feed-in tariff which are quite attractive and therefore they do not approach ministry for meager amount of CFA.

c. As per the provisions of the biomass cogen (non-bagasse) programme, the funds are released after the completion of the projects and receipt of performance reports for at least three months. As the completion of a few projects delayed, the total budget allocated could not be utilized during last two years, which was the reason for variation between BE, RE and Actuals during the last two years. However, the budget allocation for the year 2009-10 has been kept at the same level that of for the year 2008-09.

51. According to the Ministry, the physical and financial target under this programme for 2009-10 is 400 MW and Rs. 29.90 crore respectively. Achievement for the period of April-September 2009 is 207.8 MW. On being asked as to what steps have been taken by the Ministry to achieve the proposed targets during the current financial year, the Committee have been informed as under:

> "In addition to continuation of existing financial and fiscal incentives, MNRE is pursuing with Central Electricity Regulatory Commission and State Electricity Regulatory Commissions for realistic parameters on capital cost, debt equity ratio, return of equity, PLF, fuel price, station heat rate etc. for determination of tariff for renewable energy sources including biomass and bagasse cogen projects. Ministry is also persuading the state nodal agencies of Maharashtra and Tamil Nadu for developing financing models for setting up cogeneration plant in cooperative sector sugar mills on BOOT basis and availing Government subsidy."

52. Regarding the thrust areas for R&D support for biomass power/cogeneration programme the Ministry in a note stated as under:

> "The boiler turbine technology of biomass combustion/ cogeneration is similar to coal based power plant except for handling of biomass material. The state-of-art technology is available in the country for setting up of such projects. Some of the projects in the country have adopted to very efficient technologies *i.e.* upto 105 ata pressure boiler. Biomass power producers, however, addresses specific issues with respect to management, storage and utilization on biomass power and cogeneration projects for trouble free firing of different biomass materials.
>
> Identified thrust areas in biomass gasification include Combined Heat and Power (CHP) or Integrated Gasification Combined Cycle (IGCC), development of fluidized bed biomass gasifiers, advanced gas cleaning systems including hot gas cleaning system, complete tar decomposition and safe disposal of wastes in commercial production etc. Biomass gasification technology suitable for woody and non-woody biomass has been indigenously developed for various sizes ranging from KW to MW and licensed to entrepreneurs. Biomass gasification based systems for thermal, electrical and motive power needs have been developed and/or deployed various applications in industry/rural areas."

53. The details of funds allocated and utilized under R&D programme on biomass gasifier technology during first two years of 11th Plan are given below:

Programme	2007-08 (Rs. in crore)		2008-09 (Rs. in crore)	
	Allocations	Expenditure	Allocations	Expenditure
Biomass Gasification R&D	0.20	0.14	0.20	0.10

54. The Committee have been informed that an allocation of Rs. 50.00 lakh has been made during 2009-10 under R&D programme on biomass gasifier technology.

D. Solar Power Programme

55. India is endowed with a vast solar energy potential. Most part of the country have about 300 sunny days and the average solar radiation incident over the land is in the range of 4-7 KWh per square metre per day. Solar energy can be harnessed through two routes, namely, solar photovoltaic (SPV) and solar thermal:

(i) Photovoltaic route: converts the light into electricity which can then be used for variety of purposes such as lighting, pumping, communication and battery charging, etc.

(ii) Thermal route: uses the heat for heating, cooling, drying, water purification and power generation.

56. The Ministry's programme includes R&D, demonstration, commercialization and utilization activities in respect of solar energy technologies. These programmes are implemented through the State Nodal Agencies, Indian Renewable Energy Development Agency (IREDA), R&D and industrial organizations.

57. The Ministry of New and Renewable Energy have introduced Solar Grid Power Incentive Scheme on 1st January, 2008 to develop and demonstrate Megawatt capacity solar power generation in the country. The Ministry have highlighted the Solar Grid Power Initiative as under:

"Generation Based Incentive upto Rs. 12 per KWh for photovoltaic and Rs. 10 per KWh for solar thermal power would be provided, in addition to tariff fixed by SERC. Plants with minimum of 1MW and Projects with cumulative capacity upto 5 MW per developer will be supported.

A maximum of 10 MW cumulative capacity in a State, subject to an overall capacity of 50 MW in the country, will be allowed for availing incentive.

1 plant of Solar Photovoltaic of 1.25 capacity already commissioned in West Bengal.

EFC for going ahead with 'in-principle' approval to the completed proposals already held."

58. Regarding achieving the targets, the Ministry in a note informed:

"The Ministry does not allocate lump-sum targets for distribution/ installation of SPV systems to the implementing agencies. The Programme is now being implemented in project mode. The Ministry sanctions the projects to different States upon receiving the request from them and releases 50% of CFA in advance the balance funds on receiving the progress reports and project completion report, utilization certificates, statement of accounts, etc."

59. The Ministry have been providing Central Financial Assistance (CFA) for the distribution/installation of solar photovoltaic systems such as solar lanterns, solar home lighting systems, street lights, solar pumps, stand-alone power plants, roof top systems, etc. The life of the solar panel is reported to be about 20 years. The battery life is 4-6 years only. On being asked whether funds could be provided by the Central Government for replacement of batteries in SPV systems, the Ministry in a post-evidence reply stated that it was not possible to provide CFA for the replacement of the batteries. Considering the benefits of solar PV systems, the State Government and/or the beneficiary are required to bear the cost of battery replacement.

60. On being asked about the urban application of solar photovoltaic programme and the extent of its usage at present in the country, the Committee were informed that the urban applications of SPV technology include solar street lights, traffic signal power systems, blinkers, power packs, etc. The Ministry has recently introduced a new scheme for providing central financial assistance for installation of Rooftop SPV systems (with or without grid interaction) in industrial and commercial establishments /complexes (excluding manufacturers of SPV cells/modules), housing complexes, institutions and others which face electricity shortages and are using diesel generators for backup power during the day time. There is a large potential for installation of such systems in urban areas/industries for diesel replacement.

61. The Ministry have informed that a target of 4.25 MWp of SPV Rooftop Systems for diesel replacement has been proposed during the 11th Plan period, including 1 MWp for 2009-10 and an allocation of Rs. 10 crore. has been proposed for 2009-10 and Rs. 36 crores during the 11th Plan for such systems. Recently, two SPV Rooftop systems of aggregate capacity 125 KWp for reducing diesel consumption, including one 100 KWp capacity SPV Rooftop System for installation in the University of Petroleum and Energy Studies (UPES), Dehradun and a 25 KWp system in a private company in Gurgaon have been sanctioned by the Ministry.

62. The solar thermal applications promoted under the Ministry's Programmes comprise solar water heating, solar cooking, solar air heating, solar steam generating systems and solar green buildings. So far, 2.15 million square meters of solar thermal collector area and 6.17 lakhs solar cookers have been installed/distributed in the country.

63. Highlighting the achievements made under the Solar Thermal Programme of the Ministry and the efforts made to promote the use of solar water heaters and solar cookers in the hotels, restaurants and households, the Ministry informed the Committee as under:

> "To promote the use of solar water heaters on a large scale in hotels, restaurants and households, an interest subsidy scheme is under implementation to provide loans at 2% to domestic users, 3% to institutions and 5% to commercial establishments through IREDA, some Public Sector/Cooperative Banks and other financial institutions. Capital subsidy equivalent to upfront interest subsidy is also available to registered institutions and commercial establishments, including hotels, hospitals etc., that do not avail soft loans under the scheme. Efforts are being continued to get the buildings bye-laws amended through Municipal Corporations/ Municipalities for making use of solar water heaters mandatory in certain categories of buildings. Some States are also providing capital subsidy and other incentives (such as rebate in electricity tariff) for installation of solar hot water systems. Use of solar cookers in hotels, restaurants and households is promoted by providing capital subsidy limited to certain cost benchmarks."

64. The Ministry had expected expenditure Rs. 81.90 crore against the BE of Rs. 123.25 crore and RE of Rs. 90.71 crore during 2008-09. The Budget Estimate has been enhanced to Rs. 116.00 crore for the year 2009-10. The Ministry in a note explained the reasons of shortfall in expenditure and their action plan as under:

> "One of the main areas where funds could not be utilized fully was R&D, though several initiatives were taken during the year

with an aim to accelerate development of R&D projects. These included consultation meeting with R&D organizations, public as well as industry, firming up of thrust areas and posting of the same on MNRE website for easy access, and a brainstorming workshop at IIT Bombay regarding solar thermal power generation. A number of projects were developed and processed after appraisal. Some of these projects have been sanctioned during the current year and the budget provision is likely to be fully utilized."

65. The Committee desired to know project-wise status of Grid based power projects under Solar Power Programme. The Ministry in a written reply stated:

"The Ministry in early 2008 had announced a Demonstration Scheme for providing Generation Based Incentives for a total 50 MW Grid — Connected Solar Power capacity (25 MW Solar PV and 25 MW Solar Thermal). Out of this, one project of 1.1 MW capacity has already been installed at Seebpore Power Station of DPSC Ltd., Block — Jamuria in Asansol District in West Bengal.

The demonstration progarmme generated interest in the project developers. It has also helped in announcement of policy by states like Gujarat, who have proposed to purchase 500 MW of solar power by 2014. Many state electricity regulatory commissions have announced tariff for solar power. The Central Electricity Regulatory Commission has issued guidelines for solar specific tariff. In the meantime, National Action Plan on Climate Change was brought out by PMO, which envisioned setting up of National Solar Mission. In anticipation of quantum jump in the targets for solar power under National Solar Mission, the approval process for the applications received by the Ministry under its Demonstration Programme for Grid Interactive Solar Power got delayed. In order to enable providing generation based incentives for the total 50 MW capacity over ten years period as per provisions of the programme has been estimated to be Rs. 969 crores. The EFC for the scheme has been recently held and the Ministry is preparing a Note for the Approval of the Cabinet Committee on Infrastructure."

(i) Research, Design & Development for Solar Power Programme

66. The Committee have been informed that the actual expenditure for R&D for solar energy during the last three years was only Rs. 2.52 crore against an allocation of Rs. 9.15 crore. Explaining the reasons for low expenditure during the last three years and their

efforts for enhancement of R&D activities in Solar Energy Sector, the Ministry in a note stated:

> "Adequate numbers of R&D proposals in the area of Solar Energy could not be developed during the last three years to utilize fully the allocated funds, though efforts were made with various R&D organizations, academia and industry. However, these efforts have since been intensified over the last year and have now started yielding results. During the current year, six R&D project proposals have been sanctioned. Out of Rs. 20 crores allocations for R&D in Solar Energy for the current year, an amount of Rs. 14.41 crores has already been released for these projects. R&D efforts are being further intensified through in-depth interactions with various research groups, institutions and industry and specific proposals are being prepared in the identified thrust areas."

67. Regarding use of Silicon in SPV modules in India, the Committee have been informed that Crystalline silicon technology is still the major technology employed by most of the system developers all over the world. Nearly 88% of the SPV systems, which have been installed in the world, have the single or multi-crystalline silicon solar cells. Thin film modules are still in early stage of field trials. Experiments have been going on with cheaper materials as well but their efficiency, reliability and life are yet to be established. The Ministry is supporting R&D in different areas including new materials to increase the efficiency, reliability and lifetime and Ralso for reduction of cost.

68. Regarding the thrust area for R&D activities in Solar Photovoltaic and Solar Thermal, the Ministry submitted as under:

> "The thrust areas identified in solar photovoltaic technology include development of poly-silicon material, crystalline silicon solar cells and modules, thin film solar cell modules, new materials based solar cells, concentrating solar cells and modules, storage systems, balance of systems and PV system integration aspects and testing.
>
> The thrust areas identified in Solar Thermal Research include solar thermal electric power generation, solar systems to meet industrial process heat requirements, low temperature applications, solar cooling and solar buildings".

69. According to the Ministry, the outcome of the research in the thrust areas during the 11th plan will lead to (i) improvements in efficiencies (ii) reduction in material and energy consumption through

use of new materials and thin film device structures, and (iii) improving the reliability, quality and life expectancy of the balance of system components.

(ii) National Solar Mission

70. Detailing the background note on National Solar Mission, the Ministry of New and Renewable Energy informed the Committee as under:

> "The National Action Plan on Climate Change has identified development of solar energy in the country through a National Solar Mission. The National Action Plan released in June 2008 had suggested to undertake R&D in solar energy technologies to bring down cost, set up domestic manufacturing capacities and encourage solar power generation in the country. The Prime Minister's Council on Climate Change met on August 3, 2009 under the chairmanship of the PM to consider the draft National Solar Mission document. The council has endorsed in-principle the Mission, in particular, the target of 20,000 megawatts of solar generation capacity by 2020. It was agreed that taking into account the need to ensure India's energy security as well as ecologically sustainable growth, the rapid development and deployment of solar energy applications would be critical. The Council was of the view that given the outlook of rising demand for and depleting reserves of conventional energy sources world-wide, solar energy is seen as the most promising, abundant and domestically available source of energy for the country in the long run. The Mission has proposed a three phase strategy to expand solar energy applications in the country. Carefully starting, in the first phase, with proven applications, field testing of emerging applications and aggressive R&D to reduce the cost and improve the overall performance. The electricity regulators are expected to fix preferential tariff for solar power and the Central Government will assist the States to share a part of the burden on the utilities. As the cost starts declining, expand the activities in the second phase and start withdrawing central financial support in the third phase and allow solar applications to compete in the market. With aggressive R&D, volume production in the country and long term policy for power purchase, by 2020 it is expected to achieve grid power tariff parity. The implementation of the Mission will proceed on the basis of the technology advancements and cost reduction, which will be necessary for rapid scale-up and to achieve the target of 20,000 megawatts.

The Ministry is already working on different aspects of development and promotion of solar energy technologies. It has identified the thrust areas of research to develop solar energy technologies and reduce cost of solar power generation in the country. A number of schemes on solar photovoltaic and solar thermal technologies are under implementation.

The Ministry is implementing a scheme to provide fellowship to students for pursuing research in solar energy. Several technical institutions including some of the IITs are teaching renewable energy as part of their M. Tech degree. The Ministry is also supporting several R&D institutions and industry to pursue R&D in solar energy. Use of solar water heaters on certain types of functional buildings is already made mandatory. The Central Electricity Regulatory Commission has recently brought out draft guidelines to fix tariff for solar power purchase by the utilities."

E. Urban Waste to Power

71. According to the Ministry, the implementation of the programme on Energy Recovery aimed at Municipal Solid Wastes and Urban Wastes such as cattle dung, vegetable market and slaughter house wastes along with agricultural residues and agro-industrial wastes. Financial assistance being provided for projects of various types is as follows:

- **Setting up five pilot projects on energy recovery from Municipal Solid wastes:** Rs. 2 crore per MW, subject to ceiling of 20% of project cost and Rs. 10.00 crore per project, whichever is less, is provided for five projects.
- **Power from biogas generated at Sewage Treatment Plants:** 40% of the project cost subject to a maximum of Rs. 2.0 crore/MW for projects for generation of power from biogas being produced at Sewage Treatment Plants.
- **Power generation from other Urban Wastes and mix of Urban and Agricultural/Agro-industrial Wastes:** 50% of project cost subject to a limit of Rs. 3 crore per MW for projects based on biomethanation technology for power generation from cattle dung, vegetable market waste, slaughterhouse wastes, night soil and any other urban wastes. Financial assistance of 30% of project cost subject to upper limit of Rs. 3.0 crore/MW is provided for projects based on biomethanation technology for power generation

from a mix of cattle dung, vegetable market and slaughterhouse wastes along with agricultural residues and agro-industrial wastes. In case of projects for generation of only biogas for thermal application, the financial assistance is limited to Rs. 1.0 crore/MWeq (i.e. biogas production of 12000 cu.m/day).

72. 12 new projects based on Energy from MSW were developed. However, the Programme Advisory Committee has recommended only two of these projects with an aggregate capacity of 24 MW for sanction by the Ministry. A project for generation of 8 MW power from Municipal solid Waste was sanctioned for Bengaluru city, Karnataka state.

73. The physical and financial targets and achievements for the waste-to-energy Programme for the last two years as furnished by the Ministry are as under:

Plan/Year	Physical (in MW)		Financial (Rs in crore)	
	Target	Achievement	BE/RE	Expenditure
2007-08	25	18.72	13.50/13.50	8.66
2008-09	25	11.02	25.50/13.55	10.80

74. Regarding variations between BE, RE and actual and also less expenditure during the last two years under the programme, Ministry in a written note stated as under:

"The main reason for less expenditure during last two years was the stay on Government support for Municipal Solid Waste based projects by the Supreme Court during hearing on a PIL in May 2005, which was vacated only in May 2007. The formulation of scheme in accordance with direction of Supreme Court and commencement of development of projects thereafter has led to less expenditure than that planned for the respective years. After the revival of scheme in 2007-08, the Project development activities were taken up and financial support for a project of 8 MW capacity in Bangalore was sanctioned during 2008-09. Further, shortfalls were also due to the long time taken for development of projects and provision for disbursement of funds only after the release of 50% of bank loan for the urban waste based projects and the balance of funds for these and other projects upon their successful commissioning. Allocation of Rs 22.00 crore for 2009-10 is slightly less than that for 2008-09 as only one project based on Municipal

Solid Wastes is expected to become eligible for release of central financial assistance during 2009-10."

75. While giving details of the projects on Energy Recovery from Urban Wastes, the Ministry have stated that proposals are under development for projects on energy recovery from municipal solid wastes for a few other cities namely Guwahati, Kanpur, Kota, Mumbai and Pune. On being asked about the current status Project-wise, the Ministry have furnished as under:

"Municipal Corporation of Guwahati has developed a project on energy recovery from Municipal Solid Waste (MSW) and has requested the Ministry of Urban Development for revision in the MSW management project already sanctioned under JNNURM without the component of waste-to-energy. This request has so far not been acceded to by the MoUD. As regards other cities, projects on MSW Management developed and bid out for selection of project developer by the Municipal Corporations of Kanpur and Mumbai do not include waste-to-energy as a mandatory component. The MSW Management projects awarded for the city of Pune include processing through composting and production of refuse derived fuel. The MSW management project for the city of Kota has not been developed so far. As such, projects developed so far for the above mentioned cities, other than the city of Guwahati, do not include waste-to-energy as a means of waste treatment and processing.

The Ministry have further stated that while the Ministry of New and Renewable Energy have been implementing a programme on Energy Recovery from Urban Wastes for more than a decade, mainly for promotion of commercial projects by providing certain financial incentives, but the progress has been rather slow."

76. Further detailed note on the present status of projects on energy recovery from urban waste projects as furnished by the Ministry is given at ***Annexure-V***.

77. The Committee desired to know the steps being taken to expedite projects on Energy Recovery from Municipal Solid Wastes (MSW), the Ministry in a written note stated as under:

The scope to expedite the development of projects on Energy Recovery from Municipal Solid Wastes (MSW) is restricted by the limit of only five projects imposed by Hon'ble Supreme Court of India during hearing on a PIL, besides lack of thrust on energy

from wastes in the solid waste management initiatives being supported by the Ministry of Urban Development. Ministry is, therefore, taking more initiatives for expediting projects on Energy Recovery from Urban Wastes other than MSW. Some of the initiatives are as follows:

- Workshops and Seminars are organized in different regions to create awareness and promote projects for recovery of energy from urban wastes.
- A Guidebook on generation of electricity from biogas being produced at Sewage Treatment Plants has been prepared for exploiting the immense potential for such projects as has already been done at Surat.
- The 1 MW project on power generation through biomethanation of cattle dung installed in Ludhiana has been functioning satisfactorily and has been awarded as the Best Green Project in Asia, by Asia Power at a function in Bangkok. With a view to promote its replication at other locations, a seminar including a field visit to this project was organized at Ludhiana.
- A new initiative has been taken for development of biogas upgradation systems for converting biogas into Natural Gas (NG) quality fuel for supplementing the supply of CNG. Research and Development projects have been taken up at Indian Institutes of Technology for developing indigenous field-worthy systems for upgrading biogas to Natural Gas quality
- With a view to adapt the high efficiency and clean technology of gasification for energy recovery from Municipal Solid Wastes, a Research Project entitled, "Advanced Refuse Derived Fuel Gasification System" has been sanctioned for the Indian Institute of Science, Bangalore. This project will, *inter-alia,* include setting up of a full scale demonstration project of 250 KW capacity.

F. Remote Village Electrification Programme

78. The Remote Village Electrification Programme (REVP) of the Ministry aims at providing basic lighting/electricity facilities through renewable energy systems in those unelectrified remote villages and hamlets where grid extension is either technically not feasible or not cost effective. The programme has been designed to cover only those

villages and hamlets which are not taken up under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). Such villages/hamlets have to be covered through local decentralized, renewable energy systems to meet the national goal of universal electrification. The Ministry have informed that solar lighting is the most preferred option by the States and more than 97% of the villages covered so far have been provided with solar home lighting systems which have two CFL lamps of 9 W each.

79. The progress made during the 10th and 11th Plans under the programme is shown below:

PROGRESS DURING THE 10TH & THE 11TH PLANS

Plan	Target	Sanctioned	Completed as on 31.03.2009	Ongoing
10th	5000	5163	4200	502 (461 dropped)
11th	10000	2898 as on 30-09-2009	250	2648
Total	15000	8061	4450	3150

80. The year-wise achievement *vis-à-vis* targets of Remote village Electrification Programme during the first two years of 11th Plan as tabulated by the Ministry are as follows:

2007-08			2008-09		
Target	Achievement		Target	Achievement	
	Sanctioned	Completed		Sanctioned	Completed
2000	1992	1279	1500	636	326

81. On being asked as to why the targets set by the Ministry could not be achieved during the last two years, the Ministry explained:

> "The physical achievements are dependent upon the states identifying the villages to be covered and submitting the proposals to the Ministry for the same and carrying out implementation of the approved projects in a time bound manner. No proposals from the states were left unapproved as on 31-3-2009 and during 2009-10 also all eligible proposals received so far have been approved and initial funds released to the agencies.

It is apparent that extension of Grid to all the unelectrified villages is the preferred option for the state governments, particularly since 90% funds required for this purpose are being made available by the Central Government under RGGVY. Accordingly, the states include most villages in the DPRs submitted for support under this Programme. However, during actual implementation, when Grid extension is found to be infeasible to remote villages, these are transferred to this Ministry for support under Remote Village Electrification Programme. This has been particularly evident in the small lots of villages identified from time to time in the states of Manipur, Jharkhand, Orissa, Maharashtra, Haryana, U.P., Assam, etc. It is expected that as the completion date of RGGVY is approached, the position with regard to the villages taken up under this Programme will become more clear."

82. The Ministry further stated in a note as under:

"The Remote Village Electrification Programme of the Ministry is intended to provide basic comfort of electricity/lighting to only those villages and hamlets which are not being taken up for grid electrification under Rajiv Gandhi Grameen Vidyutikaran Yojana. Hence, the targets set for sanction become at the best notional in light of the initial indications from the states. Before 2008-09, REC had endorsed more than 6000 villages and hamlets for coverage through renewable energy sources, out of which around 4000 had been covered. Concerned states were accordingly asked to submit proposals for the remaining villages. However, due to lack of respective state government's approvals, the implementing agencies could not submit the proposals. It may be noted that no proposal was kept pending for want of approval in the Ministry as on 31.3.2009. Similarly, the implementation of the ongoing projects also got delayed, mainly due to lack of matching share from the respective state governments. Some of the state governments, for example Assam, have still not provided their contribution of funds to the implementing agencies which is affecting the planning and causing undue delays in completion of projects. However, the Ministry continues to follow up with the respective states to persuade them to expedite the implementation."

83. The Committee have been informed that during the 11th Plan, target for covering 10,000 villages and hamlets has been proposed with an outlay of Rs. 867.89 crore and during 2009-10, a target for coverage of 1500 unelectrified villages and hamlets which are not

included under RGGVY has been set with budget allocation of Rs. 80 crore. According to the Ministry of New and Renewable Energy, the proposed physical target is based on an estimation of number of villages which may remain to be covered through grid under Rajiv Gandhi Grameen Vidyutikaran Yojana by the end of the 11th Plan when all the unelectrified villages are to be covered as per the current plans of the Government. In case most villages are covered under RGGVY by the State Governments, the target for Remote Village Electrification Programme of the Ministry will stand automatically reduced. The Ministry has been persuading the States for early identification of villages and hamlets which are not likely to be covered under RGGVY so that planning is facilitated. The matter has been taken up time to time at the levels of Chief Ministers, Chief Secretaries and Secretaries of Power/Energy. On being asked about the action plan to achieve the target set, the Ministry in a note stated:

> "The Ministry has been following up with the States on a very regular basis for early identification of such villages and hamlets so that their coverage through renewable energy sources could be planned.
>
> As a result of continuous follow-up, present indications are that Orissa will take up around 500 villages during the current year, Jharkhand will take up around 300 villages and Assam may take up another 250 villages. In addition, support has already been sanctioned for 270 villages and hamlets in various States. In view of these indications, the Ministry is optimistic of achieving the target of sanctioning support for 1500 villages and hamlets. The Ministry will also continue to interact and follow-up with the concerned States to ensure that the indicated proposals are received within the year.
>
> As on 1.4.2009, work of installation of renewable energy system was ongoing in around 3400 villages and hamlets. Out of these, indications received from the States are that some villages and hamlets may not be taken up as these are being electrified through grid. Major pendencies are in the States of Assam, Chhattisgarh, Jammu and Kashmir, Madhya Pradesh, Orissa and Uttarakhand. The Ministry is hopeful that it will be in a position to achieve completion of at least 1500 villages and hamlets out of the ongoing ones, through its persistent efforts with the State implementing agencies."

84. The Committee desired to know the specific State-wise details of villages to be electrified under the programme. The Ministry in their written reply stated that no State-wise targets are fixed under the programme and proposals are approved for financial support on case to case basis and for the remote villages and hamlets verified by Rural Electrification Corporation, and subject to their final acceptance by the States, and based on the future plans of the States for coverage of remote villages and hamlets through renewable energy sources.

G. Tidal Energy

85. In their Annual Report, the Ministry have mentioned that among the various forms of energy contained in the seas and oceans, tidal energy, has been developed on a commercial scale. Technologies for harnessing other forms of energy from seas and oceans are still under development. Though India has a long coastline yet the estuaries and gulfs where tides get pronounced becoming suitable for making turbines are very few. In order to develop and harness tidal energy for power generation, the Ministry are implementing a programme on tidal energy.

86. On a specific query as to how much power have been extracted from tidal wave, the Ministry have informed that the tidal power potential in India is estimated to be around 7,000 MW with potential sites in the Gulf of Kutch and Gulf of Cambay in Gujarat and the Delta of the Gangas in Sunderbans in West Bengal. The Ministry has sanctioned a pilot tidal power project of 3.75 MW capacity for installation at Durgaduani Creek in Sunderbans, West Bengal to West Bengal Renewable Energy Development Agency, Kolkata. The Project is being implemented through NHPC Ltd., which is evaluating the sole international bid received by it from a Chinese company for an EPC contract. The NHPC Ltd. is yet to take a final decision.

H. Development of Hydrogen Energy

87. As reported by the Ministry, hydrogen is a clean energy carrier with potential to replace liquid and gaseous fossil fuels. The Ministry have been supporting RD&D on different aspects of hydrogen energy covering hydrogen production, storage and utilization and fuel cell technologies through research, scientific and educational institutions, national laboratories universities, industries, etc. to make the evolving hydrogen energy and fuel cell technologies more efficient, convenient, safe and reliable, apart from making the sector cost-competitive.

88. Giving the details of the efforts made by the Ministry to develop new sources like hydrogen energy in the country, the Ministry in a written reply stated:

> "The Ministry has been implementing a broad-based research, development and demonstration programme on different aspects of hydrogen energy and fuel cell technologies in the country for about two decades. Laboratory level prototypes of hydrogen fuelled motorcycles, three wheelers, engine-generator sets, PEMFC based power pack & UPS system and water/methanol electrolysers for hydrogen production have been developed. A project for introduction of H-CNG blends in the existing CNG vehicles is under implementation. A total of 25 RD&D projects on different aspects of hydrogen energy and fuel cell technologies are under implementation as on 30.6.2009. Further project proposals are under evaluation. A Detailed project report for setting up a 'National Hydrogen Energy and Fuel Cell Centre' is under preparation."

89. When the Committee asked the latest position of setting up the said National Centre, the Ministry have stated:

> "The draft DPR of the National Hydrogen Energy and Fuel Cell Centre (NHEFCC) was prepared and sent for expert comments. These comments have been received, which are under consideration of the Ministry, and are being utilized for finalization of the DPR. Thereafter, based on the final DPR, necessary steps will be taken to get the approval of the competent authority for this project."

90. As regards its salient features of the proposed NHEFCC, the Ministry in a written note outlined the following points:

- The Centre would serve as a nodal institution for all research and development activities in hydrogen energy and fuel cell technologies in India. It would specially focus on product development of hydrogen and fuel cell technologies in coordination with Industry, academic and research institutions and undertake pilot and demonstration projects.

- It would pioneer new hydrogen storage technologies. Its other focus areas would include accelerated development of fuel cell systems for stationary and transport applications and hydrogen production from solar energy sources.

- It would take up public awareness and education programmes in coordination with various research, academic and educational establishments.
- It would provide testing facilities for hydrogen and fuel cells technologies, including certification of performance parameters and develop standards, codes and protocol for different components of hydrogen system and serve as a regulatory body for hydrogen energy technologies and coordinate with international institutions in other countries on R&D projects of mutual interest.
- It would coordinate implementation of the National Hydrogen Energy Road Map for achieving its goals and targets.
- The Centre is proposed to function as an autonomous institution under Ministry of New and Renewable Energy in the Solar Energy Centre campus at Gwalpahari in Gurgaon, Haryana. The Centre would be a Public Private Partnership venture, with private and non-governmental sectors actively involved in the functioning of the institution.
- The total cost for setting up of the National Hydrogen Energy and Fuel Cell Centre based on the initial estimates in the draft DPR under preparation for this Project is estimated to be of the order of Rs. 500 crores.

VI. RESEARCH, DESIGN & DEVELOPMENT IN NEW AND RENEWABLE ENERGY

91. The Ministry of New and Renewable Energy promotes and 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. Thrust areas for R&D efforts have been identified under various programmes. Some of the technologies are already becoming cost competitive and affordable provided in built subsidy on conventional fuel based alternative technologies, systems and devices are removed by the government. However, some of the technologies for solar based power generation would take little longer time to become cost competitive to conventional fuel based power generation.

92. The information on the funds allocated and utilized for R&D during each of the last two years, as furnished by the Ministry is given below:

Year	Budget Allocated(in crores)	Expenditure(in crores)
2007-08	41.26	30.88
2008-09	53.65	25.62

93. The budget estimate of Rs. 75 crore for the year 2009-10 is, according to the Ministry sufficient to meet the requirements of the projects envisaged for the current year.

94. When the Committee asked the reasons for low expenditure during 2008-09 and its action plan to utilize the budget allocation of Rs. 75.00 crore for 2009-10, the Ministry have stated:

> "The Ministry initiated the process of consultation in March-April 2008 to put in place comprehensive guidelines which facilitate faster approval of projects in line with the revised guidelines of the Ministry of Finance dated the 15th November 2007 for the 11th plan and a mechanism to take up good quality RD&D projects to achieve the goals set. The revised policy & guidelines were launched on 23rd July 2008. The guidelines have special focus on proper appraisal of R&D projects, demonstration of indigenously developed technologies on 50:50 cost sharing basis and providing core funding to R&D institutions for strengthening their expertise in specific area for taking up advance research for technology development and monitoring of R&D projects to achieve the objectives in time. During 2009-10, the Ministry has taken initiative to take up advanced projects in the area solar thermal power generation, higher efficiency solar cells apart from mission mode projects setting time frame for achieving goals."

95. Highlighting the benefits derived from RD&D projects during the last three years in the field of new and renewable energy, the Ministry have informed that the RD&D projects taken up during the last three years facilitated to strengthen R&D capacity of institutions to take up projects for technology development with commercial potential in long term. The projects taken up include higher efficiency solar cells, solar thermal power generation, advance research in biomass energy including development of specifications and standards of biomass energy system, hydrogen energy storage and fuel cells development, etc. In the area of biogas generation, demonstration

projects on purification, bottling and utilization for various applications including biogas based refrigeration were taken up.

VII. TAXES/DUTIES PROPOSED

96. The Committee have been informed that the following proposals for reduction/abolition of taxes/duties being levied on various equipments and materials used in the renewable energy sector are under consideration of the Ministry of Finance:

(i) Proposal for Solar Thermal Energy Sector:

- Inclusion of certain additional items in the list of items eligible for concessional customs duty of 10% and reducing this duty on the entire list from 10% to nil.
- Full waiver of customs duty on all items of machinery required for initial setting up of projects for power generation using solar thermal energy.

(ii) Proposal for wind Power Sector:

- Removal of anomaly relating to Cenvet credit on service tax on installation & commissioning changes of wind power projects set up for captive use.

97. Explaining the latest position in this regard, the Ministry have informed that the proposals are still under consideration of the Ministry of Finance.

PART II

OBSERVATIONS/RECOMMENDATIONS

The Committee take note that the Rule 331G 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 Hon'ble Speaker, Lok Sabha to enable the House to pass the Demands for Grants for the year 2009-10 during the Second Session of Fifteenth Lok Sabha without the same being referred to the concerned DRSCs. The Demands were, however, referred to the Standing Committees for examining the same after their constitution and for presenting the Report to the House therein. The Committee, after their constitution on 31st August, 2009 took up examination of the Demands for Grants pertaining to the Ministry of New and Renewable Energy for the year 2009-10. Since the Budget for the year 2009-10 has already been passed by the Parliament, the Committee endorse the same. The Committee would however, like the Ministry to take note of their recommendation while implementing various programmes/schemes, etc. within the approved budget.

I. 11th Five Year Plan Programmes

2. The Committee are unhappy to note that against the total budgetary outlay of Rs. 4000 crore for 11th Plan period only Rs. 1062 crore has been expended in the first half of the Plan which accounts for about 26.5% of the total budget provision. The Committee strongly feel that the shortfall in utilization of funds is bound to have a cascading effect on the achievement of programmes/ projects envisaged in 11th Plan period. The reasons given by the Ministry *inter alia* included indepth evaluation of schemes/ programmes in line with Ministry of Finance guidelines, change in approval mechanism for Ministries schemes/programmes and need to restructure the schemes within the framework of the 11th Plan proposals. The Committee are not at all satisfied with the reasons advanced by the Ministry for their dismal performance as no proactive measures seem to have been taken by the Ministry to overcome the hurdles that have impeded the implementation of the projects. Since first half of the plan is over, the Ministry were expected to spend at least 40% of the budgetary provision for implementation of projects by now. The Committee would like the

Ministry to focus on specific areas which have been affecting the implementation of the projects.

3. Regarding power generation, the achievement in Grid-interactive programme is about 4659 MW till 31st July 2009 against the 11th Plan target of 14000 MW. Similarly, in Off-Grid sector achievement is 177.13 MWeq. upto 31st July 2009 against the targets of 1,000 MWeq. The Committee note that the physical achievement upto the first half of the 11th Plan is nearly one-third of the total target in Grid-interactive renewable power programmes. The performance in Off-Grid Programme has also not been encouraging and only 17.7 per cent achievement has been made so far which is far below the half-way mark. In their 26th Report (14th Lok Sabha) on the Demands for Grants for the year 2008-09, the Committee had called for a focused approach of the Ministry towards achieving targets set in the current plan period with optimum utilization of the funds so as to secure the desired increase in allocation from the Planning Commission for the remaining three years of the 11th Plan. The Committee, however, feel that the Ministry did not take the recommendations of the Committee seriously and are constrained to point out that the Ministry are neither showing resolve to spend the amount allocated nor they are able to make the expenditure result oriented. In the meantime, the Ministry is reported to have completed mid-term appraisal of 11th Five Year Plan. The Committee trust that the Ministry will take all the corrective steps particularly on weak areas identified in mid-term appraisal during the remaining part of the current plan period to realize the goals set in 11th Plan. In order to have a perspective planning, the Committee would like the Ministry to bring out a Vision Document.

II. Demands for Grants of MNRE for 2009-10

4. The Committee note that the Budget allocation of the Ministry of New and Renewable Energy for the year 2009-10 is Rs. 628 crore comprising Revenue Sections for Rs. 608.20 crore and capital section Rs. 19.20 crore. The Budget Estimates (BE) for the year 2008-09 stood at Rs. 624.09 crore, which were subsequently reduced to Rs. 509 crore at Revised Estimates (RE) stage *i.e.* a net reduction of about Rs. 115.09 crore. So far as Estimates under the plan head is concerned, the reduction amounted to Rs. 117.60 crore (*i.e.* Rs. 617 crore BE Rs. 499.40 crore RE). Though the Ministry could only utilize Rs. 441.79 crore under plan head during 2008-09, the Committee find that during the current financial year, the Ministry have utilized Rs. 260 crore out of Rs. 617 crore under plan

head upto 30th September 2009 which is over 42 per cent of BE. The Committee appreciate the resolve shown by the Ministry for full utilization of the allocated amount by the end of the financial year. This would obviate the possibility of reduction of budget at RE stage as was done during previous years. The Committee also take note of the apprehensions shown by the Ministry regarding performance utilization of the funds by the State Nodal Agencies which are responsible for implementation of various Schemes/ Programmes in their respective State and hope that the Ministry will overcome the difficulties successfully by prompt initiative, constant supervision and proactive approach while coordinating with the States. The Committee feel that the corrective measures being undertaken by the Ministry need proper monitoring so that the coordination mechanism of the Ministry and State Governments becomes more effective to help curb delays that hamper implementation of plan projects.

5. The Committee are concerned to observe that the Ministry have not initiated any concrete action to motivate or persuade non-performing States/UTs which have shown lack of interest in the renewable sector. What is more disquieting to note is the fact that Ministry do not make State-wise allocations in advance. The transfer of financial resources from the Ministry to the State Governments is linked to performance of the respective State Governments which the Ministry release only when utilization certificates for previous releases have been made. As a matter of corrective steps, the Committee were informed that all out efforts are being made to promote various renewable energy programmes in all States/UTs through increased private sector participation. The Committee recommend that advance allocations within a given financial year needs to be rationalized in terms of financial jurisprudence. The Committee desire the Ministry to sensatise the non-performing States/Union Territories in the field of renewable sector by having frequent interaction with them through an effective mechanism. The Committee would like the Ministry to consider a proposal for giving little more incentive to private sector to give boost to renewable sector.

III. Grid-interactive and Off-Grid

6. The Committee observe that the Grid-interactive and Off-Grid Renewable Power Programme, being related to renewable power generation, is the most important section and can be termed as the mother of all the renewable programmes. The Committee

feel that in the present scenario of climate change and global warming, the need to focus more and more on clean sources of the energy as compared to the conventional fossil fuel has assumed much significance. However, a scrutiny of the data made available by the Ministry on achievements made during the year 2009-10 so far in terms of power generation reveals that against the target of 3224 MW Grid Power, only 429 MW has been achieved till 31st July, 2009 which is barely 13.3 per cent of the target. The situation in off-grid section is more gloomy as only 6.56 MWeq. has been achieved till 31st July, 2009 against the annual target of 95.80 MWeq. which forms 6.84 per cent of the target. What is further disquieting is the fact that the achievement is badly lagging behind the target in all the segments of the Grid-Power and Off-Grid Distributed Renewable Power Programme. The Committee desire that in order to ensure the conversion of targets into achievements in the current financial year, the Ministry should launch special campaign for promoting Grid-interactive and especially Off-grid programme.

A. Wind Power Programme:

7. The Committee observe that expenditure during 2007-08 under Wind Power Programme was Rs. 16.07 crore against BE of Rs. 21 crore and RE of Rs. 15.50 crore. The physical achievement of 1663.5 MW has surpassed target of 1500 MW during 2007-08. But the position has not been very satisfactory during 2008-09 and the Ministry could expend only Rs. 14.20 crore against BE of Rs. 22.25 crore and RE of Rs. 19.50 crore during 2008-09 and the physical achievement of 1485.50 MW also fell short of the target of 2000 MW. The physical target of 2500 MW has been fixed for the year 2009-10 and achievement upto 31st July, 2009 has been only 222 MW which is merely 8.88 per cent of the annual target. The reasons adduced by the Ministry for poor performance in 2008-09 included regulatory and tariff issues in a few States, inability to introduce Generation Based Incentives (GBI) and non-conducive investment environment due to global economic recession. The Committee do agree with the Ministry that there is no direct relationship between the budget allocation and the capacity addition in wind sector as this is entirely achieved through private sector investment and the Government do not provide any capital subsidy or direct financial incentive for setting up wind power projects. The Committee have been given to understand that the budget estimates under wind energy are towards supporting wind resource assessment, demonstration projects and for activities of Centre for Wind Energy

Technology (C-WET). Under the given circumstances the Committee feel that even though the Ministry do not play a direct role in capacity addition, they are providing a solid base, conducive atmosphere and favourable opportunity for private sector investment for growth of the wind energy sector. Now as the Ministry have come forward with Generation Based Incentives, tariff reforms, CERC Guidelines and other initiatives, the Committee are unable to find any logical reason for such a poor show in the current financial year in converting their efforts in results. The Committee desire that a periodical review of the projects and corrective measures be taken so as to ensure achievement of the target during the remaining part of the year.

8. The Committee find that the budget allocation of Rs. 7.00 crore for wind power programme during 2009-10 is too less as compared to BE of Rs. 22.25 crore in 2008-09. The Committee have been given to understand that in the previous years, the budget estimates for wind energy programme included the budgetary support for the Centre for Wind Energy Technology, whereas, during 2009-10, Rs. 8.40 crore has been separately allotted for C-WET under a different budget head "Research Institutions/Centres". The Committee recommend that evaluations of the projects and expenditure position need to be carried out to ensure to achieve the target of 2500 MW grid-interactive power capacity addition from wind power fixed for 2009-10.

9. Research & Development undertaken by the Government for wind energy reportedly focuses on wind turbine components, research on wind resource assessment, wind prediction tool, wind hybrid systems, design and manufacturing methodologies etc. The consolidated R&D projects are being co-ordinated by C-WET. According to the Ministry, the R&D Council is making the C-WET get the involvement of the premier R&D institutions like IITs, IISc, CSIR Labs etc. on long-term research on specific projects in a coordinated manner. While appreciating all these R&D activities in wind energy sector, the Committee observe that C-WET spent a negligible amount of Rs. 2.40 crore on R&D activities during the 10th Five Year Plan. During 11th Plan Rs. 80 crore have been earmarked for R&D in Wind Energy Sector out of which a meagre amount of Rs. 5.50 crore have been spent upto 31st July, 2009 which also include an expenditure of Rs. 5.06 crore made during the year 2007-08 only. The Committee find that an allocation of Rs. 5 crore has been allocated for RD&D activities for wind energy within the overall allocation of Rs. 8.40 crore to C-WET during 2009-10 and

almost entire funds are unspent. The Committee also take note of the fact that there is a vast potential in this sector lying unexplored in the country and almost 77.5 per cent of the physical target of Grid Power generation set for current financial year (*i.e.* 2500 MW out of 3224 MW) comprise of the target set under wind energy programme with a dismal achievement of 222 MW till 31st July, 2009. Moreover, the PLF is 21 per cent and wind mapping of the whole country is still not done. Against this backdrop, the Committee recommend that the Ministry should focus on the RD&D of wind energy with full momentum in order to prepare a solid base for optimum exploitation of wind energy potential available in the country.

10. The Committee find that the Ministry had sanctioned a project on preparation of Indian Wind Atlas to Centre for Wind Energy Technology (C-WET), Chennai in association with RISO National Laboratory, Denmark in November, 2006 at an estimated cost of Rs. 2 crore. During the examination of Demands for Grants of the MNRE for the year 2008-09, the Committee were informed that the project was expected to be completed by the end of 2008-09. On being enquired about the programme made in this regard, the Ministry have stated that the validation of the results for fine tuning for different regions is in progress and a small delay has occurred due to the need for extensive validation of the models in some of the selected regions. The Ministry have informed that the Wind Atlas is expected to be completed by the end of 2009. The Committee are concerned to observe that such an important project of preparation of Wind Atlas of the country on which the whole wind energy programme is dependent to get vital input in terms of identification of windy locations and the development of wind energy, is getting delayed for reasons which are routine in nature and are avoidable. The Committee expect that the project will be completed in the revised time schedule needless to emphasise that the Ministry would monitor it on regular basis.

B. Small Hydro Power Programme

11. The Committee observe that Small Hydro Power (SHP) can provide electricity to remote areas and hilly terrains in a cost effective manner. The Committee find that against the estimated potential of SHP projects (upto 25 MW capacity) at 15,000 MW in the country and identified 5415 potential sites with an aggregate capacity of 14292 MW, the installed capacity of SHP as on 30.09.2009 is 2502.24 MW from 682 projects. Further, 313 projects with 1007.28 MW capacity are under implementation. The Committee are

distressed to find that against the target of 1400 MW for the 11th Plan, only 478.68 MW capacity has been achieved as on 15.07.2009 *i.e.* only 34% of the targeted capacity. Further, during 2009-10, against the target of 300 MW, the achievement as on 30.09.2009 has been 72.47 MW. The Committee are given to understand that the Ministry is closely monitoring implementation of SHP projects including those allotted to the Private Sector in the potential States. While the Committee take note of the initiatives of the Ministry for faster implementation of projects, the Committee feel that problem areas in this area should be identified and corrective steps be taken to achieve the desired goal of the 11th Plan and of the current financial year as well.

12. The Committee observe that during 2008-09, the budget for SHP Programme was enhanced from Rs. 57.50 crore to Rs. 82.50 crore at RE stage to meet the financial requirement of the project on 'Electrification/illumination of border villages of Arunachal Pradesh' which was started in November, 2008 as per the announcement made by the Prime Minister during his visit to the State in February, 2008. Further, out of the total allocation of Rs. 107 crore for the year 2009-10, the Committee note that an allocation of Rs. 65.00 crore has been made for the border village electrification project in Arunachal Pradesh and Rs. 42 crore has been earmarked for other States with a target to achieve 275 MW of Small Hydro electricity. The Ministry have been able to release Rs. 53.93 crore for the border village electrification project in Arunachal Pradesh, while an expenditure of Rs. 14.46 crore has been incurred in rest of the States against the financial allocation of Rs. 42 crore and capacity addition of 72 MW has been achieved against the target of 275 MW till 30th September, 2009. Moreover, on analyzing the data furnished by the Ministry it has come out that the capacity addition during the first and second quarters of 2009-10 was 25 MW and 47.47 MW respectively. Against this backdrop, the Ministry have expected to achieve 71MW and 165 MW in third and fourth quarters respectively. While appreciating the optimism shown by the Ministry for achieving the remaining target during the year, the Committee are at the same time apprehensive about the Ministry's version keeping in view both the financial and physical performance shown by them so far. The Committee, therefore, recommend that both the initiatives and monitoring may be strengthened by the Ministry particularly in the potential States in order to ensure that their efforts are translated into the results.

13. Regarding R&D support in the field of SHP programme, the Committee are given to understand that the Ministry have been supporting institutions to meet technical demand of the sector and organizing training programmes on various aspects of SHP Project development and Alternate Hydro Energy Centre (AHEC) at IIT Roorkee has been developed as apex technical institution to provide all services including design, performance testing and training. The Committee are further informed that towards this initiative, country's first Real time digital SHP simulator, on-site testing facilities have been created and for small size projects, standardization of size and equipments have been done. The Committee take note of the fact that against the total potential capacity of 14,292 MW available in the country, the total installed capacity so far is only 2502.24 MW. In view of a large quantum of potential remaining unexploited, the Committee are of the opinion that the Ministry should tighten their grip over R&D sector under Small Hydro Power Programme to boost up outcome in thrust areas of R&D.

C. Biomass Power and Co-generation Programme

14. The estimated biomass power potential in the country is about 2100 MW and the cumulative biomass power/bagasse co-generation based power capacity achieved so far is 1752 MW, which comprises 703 MW of biomass power projects and 1049 MW of bagasse co-generation projects. The physical and financial targets for the 11th Plan period under this programme are 1700 MW and Rs. 130 crore respectively. The Committee note with satisfaction that the physical achievement during the last two years exceeds the target. However, the Committee are concerned to observe that during the last two years, the actual expenditure is only about 77% (approx.) of the financial target. The Ministry have informed that the promotion of biomass power projects have not shown interest to avail a small amount of capital subsidy which is about 2 per cent of the project cost. It has also been informed that bagasse cogeneration projects in private sector sugar mills do not approach the Ministry for meagre amount of CFA. The Committee feel that systematic and objective planning for better utilization of funds like working out possibilities of financial assistance in development of cooperative sector sugar mills in coordination with States would be in the larger interest of the people and would push up the physical achievement progressively

15. The Committee observe that the R&D expenditure on biomass gasifier technology during the last two years was only

Rs. 24 lakh against budget allocation of Rs. 40 lakh *i.e.* 60% of budget allocated. As the R&D activities hold the key to solve operational and technical problems associated with the programme and ushering in new and better technologies, the Committee are distressed to point out that the expenditure on R&D for the Biomass power programme during the last two years was very low. The Committee, therefore, desire that utmost importance should be attached to the R&D activities for Biomass power programme and expect that the amount of Rs. 50 lakh which has been allocated for the year 2009-10 for R&D support on biomass gasifier technology would be fully utilised.

D. Solar Power Programme

16. The Committee observe that the country is endowed with a vast solar energy potential where most part of the country reportedly have about 300 sunny days and the average solar radiation incident over the land is in the range of 4-7 KWh per square metre per day. The utilization of solar energy is basically effected through Solar Photovoltaic (SPV) and Solar Thermal routes. The Committee find that against the BE of Rs. 123.25 crore and RE of Rs. 90.71 crore during 2008-09, the Ministry had expended only Rs. 81.90 crore. The budget estimate for the current financial year 2009-10 has been enhanced to Rs. 116.00 crore. Explaining the fund utilization plan, the Ministry have informed the Committee about the Solar Grid Power Initiative introduced on 1st January, 2008 to develop and demonstrate Megawatt capacity solar power generation in the country. Accordingly, generation based incentive upto Rs. 12 per KWh for photovoltaic and Rs. 10 per KWh for solar thermal power would be provided, in addition to tariff fixed by SERC. According to the Ministry, plants with minimum of 1 MW per developer will be supported. Further, a maximum of 10 MW cumulative capacity in a State, subject to an overall capacity of 50 MW in the country, will be allowed for availing incentive. The Committee recommend that the Ministry should take up with Ministry of Finance/State Governments for suitable incentives so as to attract more investment and usage of solar energy.

17. The Committee were informed that the Ministry have introduced a new scheme for providing Central Financial Assistance (CFA) for installation of Rooftop SPV systems (with or without grid interaction) in industrial and commercial establishments/ complexes (excluding manufacturers of SPV cells/modules), housing complexes, institutions and others which face electricity shortages

and are using diesel generators for power backup. The Committee find that a target of 4.25 MWp of SPV Rooftop systems for diesel replacement has been proposed during the 11th Plan period, including 1 MWp for 2009-10 and an allocation of Rs. 10 crore for 2009-10 and Rs. 36.00 crore during the 11th Plan for such system. The Committee suggest that for better utilization of power from the solar system, the Ministry should explore the feasibility of Net Metering to connect buildings with solar systems with the regulated utility through a two-way meter. This would help the users to draw electricity from the grid if needed and to give back to the utility grid any excess electricity from their installations.

18. The Committee in their 26th Report (14th Lok Sabha) on Demands for Grants of MNRe for 2008-09 had suggested the Ministry to focus their attention in a big way on R&D investment in solar energy. The Committee note with satisfaction that the Ministry have intensified their efforts over the last year and six R&D project proposals have been sanctioned during the current year. The Ministry have released an amount of Rs. 14.41 crore for these projects out of Rs. 20 crore allocation for R&D in Solar Energy for the current year. The Committee are aware that the photovoltaic technology in vogue in the country at present are neither cost effective nor much efficient as far as energy output is concerned. The Committee, therefore, desire that the Ministry should direct their whole R&D activities in making the solar energy cost effective and getting maximum output as well. The committee have been informed that the Ministry are supporting R&D in different areas including new materials to increase the efficiency of the system, increase the reliability and lifetime and reduce the cost of the system. The Committee would like to be apprised of the outcome of the initiative being made by the Ministry in this regard.

19. The Committee have been informed that the Prime Minister's Council on Climate change endorsed the National Solar Mission in August, 2009 with a target of 20,000 MW of solar generation capacity by the year 2020. The Committee are in agreement with the views of the Council that given the outlook of rising demand for and depleting reserves of conventional energy sources worldwide, solar energy is seen as the most promising, abundant and domestically available source of energy for the country in the long run. The Committee hope that the objectives of the mission will be implemented with the focus on technological advancements and cost reduction. The Committee would like to be apprised of the details of the National Solar Mission in due course. The CERC has

reportedly brought out guidelines recently to fix tariff for solar power purchase by the utilities. The Committee may be provided with the details.

E. Urban Waste to Energy Power

20. The Committee are dismayed to observe that during the last two years, against the physical target of 50 MW under waste-to-energy programme, the achievement was only 29.74 MW. Further, against the budget allocation of Rs. 27.05 crore, the Ministry could expend only Rs. 19.46 crore. The Ministry had attributed the less expenditure to the stay on Government support for Municipal solid waste based projects by the Supreme Court during hearing on a PIL in May, 2005, which was vacated only in May, 2007. Further, according to the Ministry, the delay in development of projects was due to the provision for disbursement of funds only after the release of 50% of bank loan. Since the said stay order by the Supreme Court was vacated way back in May, 2007, the reasons extended by the Ministry being routine in nature, are not acceptable to the Committee. The Committee, therefore, desire that utmost importance should be given to expedite development of projects on energy recovery from Municipal Solid Wastes (MSW) and the amount of Rs. 12.00 crore allocated for 2009-10 under urban waste to power programme should be fully expended. By utilizing the huge potential of Municipal Solid Waste available in most urban cities, the Committee feel that Urban Waste to Energy Power programme will not only help in getting away MSW from cities but also help in power generation.

21. The Committee take note of the initiatives of the Ministry for expediting projects on Energy Recovery from Urban wastes other than Municipal Solid Wastes. Besides other new initiatives, the Committee would like to be apprised of the initiatives taken for development of biogas upgradation systems for converting biogas into Natural Gas (NG) quality fuel for supplementing the supply of CNG and also a Research Project of "Advanced Refuse Derived Fuel Gasification System'.

F. Remote Village Electrification Programme

22. The Remote Village Electrification Programme (RVEP) is one of the most important programmes of the Ministry as it aims at providing basic lighting/electricity facility through renewable energy systems in unelectrified remote villages and hamlets where grid

extension is either technically not feasible or not cost effective. The Committee observe that for the 11th Plan, the Ministry have earmarked an outlay of Rs. 867.89 crore to cover 10,000 villages and hamlets. The Committee further observe that during the first two years of the 11th Plan, against the target of 3500 villages and hamlets, 2628 were sanctioned and only 1605 villages/hamlets could be electrified. Particularly during 2008-09 electrification of only 326 villages could be completed against the target of 1500. Even the number of sanctioned villages were merely 636 which was far below the target. During 2009-10, 1500 villages/hamlets are again targeted to be covered under the programme at a cost of Rs. 80.00 crore. Regarding physical achievement, the Ministry have stated that no proposals from the states were left unapproved as on 31st March, 2009 and during the current year also all eligible proposals received so far have been approved and initial funds released to the agencies. It has been further stated that as a result of continuous follow up, there are indications that Orissa will take up around 520 villages, Jharkhand around 300 villages and Assam may take up around 250 villages during the current year. In addition, support has already been sanctioned for 270 villages and hamlets in various States. The Committee are somewhat hopeful with the approach and optimism shown by the Ministry to achieve the intended target, they are at the same time apprehensive of real performance in view of the past experience. Explaining the reasons for not able to reach near the target during the first two years of the 11th Plan, the Ministry have stated that the physical achievement is dependent on the States identifying the villages to be covered and submitting the proposals for the same and carrying out implementation of the approved projects in a time bound manner. According to the Ministry, the States prefer extension of Grid to all unelectrified villages as 90 per cent of the funds are made available under RGGVY. But during actual implementation, when Grid extension is found infeasible, these are transferred to MNRE for support under REVP. The Ministry are expecting that as the completion date of RGGVY is approached, the position with regard to the villages taken up under this programme will became more clear. The Committee instead suggest the Ministry not to wait for completion of RGGVY and in spite of the problems being confronted by the States regarding identification of the villages and implementation of the projects, the Ministry may not feel content with their efforts and establish a task force to take initiative for coordinating with States and resolving the bottlenecks with regard to both identification of villages/hamlets and implementation of the Programme.

23. The Committee had desired to know the State-wise details of villages to be electrified under the Programme. The Ministry informed the Committee that no State-wise targets are fixed under the Programme and proposals are approved for financial support on case to case basis and for the remote villages and hamlets verified by Rural Electrification Corporation, subject to their final acceptance by the States and based on the future plans of the States for coverage of remote villages and hamlets through renewable energy sources. The Committee are of the view that even if the proposals are considered and approved on case to case basis, it would be in the larger interest of the Ministry if the data is maintained State-wise including the details of the villages identified electrification, position of their sanction and status of implementation. This would help the Ministry in coordinating with the States and strive towards getting desired results in a planned manner.

G. Tidal Energy

24. The Committee have been informed that the tidal power potential in India is estimated to be around 7000 MW with the potential sites in the Gulf of Kutch and Gulf of Cambay in Gujarat and the Delta of the Ganges in Sunderbans in West Bengal. According to the Ministry, a pilot tidal power project of 3.75 MW capacity has been sanctioned for installation at Durgaduani Creek in Sunderbans, West Bengal to West Bengal Renewable Energy Development Agency, Kolkata. The Project is being implemented through NHPC Ltd. In view of the vast potential of tidal energy available owing to long coastline of the country, the Committee feel that the Ministry have a long way to go in order to harness the natural resources the nation is endowed with and fully endorse the initiatives taken by the Ministry in this regard. The Committee would like to be apprised of the status of the project.

H. Development of Hydrogen Energy

25. The Committee endorse that hydrogen is a clear energy carrier with potential to replace liquid and gaseous fossil fuels. The Committee observe that the Ministry have been supporting research, development and demonstration on different aspects of hydrogen energy and fuel cell technologies. According to the Ministry, as on 30.06.2009, a total of 25 RD&D projects on different aspects of hydrogen energy and fuel cell technologies are under implementation and a 'National Hydrogen Energy and Fuel Cell Centre' at the

estimated cost of Rs. 500 crore is being set up for which the draft DPR is under consideration of the Ministry. The Committee are aware that apart from performing other functions, the proposed Centre would coordinate implementation of the National Hydrogen Energy Roadmap for achieving its goals and targets. The Committee would like to be apprised of the States in this regard in due course.

IV. Research, Design and Development in New and Renewable Energy

26. The Committee observe that the R&D expenditure during the first two years of 11th Plan was very low. While the expenditure during 2007-08 was Rs. 30.88 crore against budget allocation of Rs. 41.26 crore, the expenditure during 2008-09 was only Rs. 25.62 crore. The low expenditure was attributed to the delay in the process of consultation to finalise a comprehensive guidelines which facilitate faster approval of projects in line with the revised guidelines of the Ministry of Finance for the 11th Plan and a mechanism to take up good quality RD&D projects to achieve the goals set. The Committee are given to understand that the revised policy and guidelines were launched on 23rd July, 2008. In view of the lines already launched, the Committee desire that the Ministry should focus the R&D projects to achieve the objectives in time, so that the budget allocation of Rs. 75 crore for R&D support during 2009-10 would be expended fully in an effective manner.

V. Taxes/Duties proposed

27. The Committee observe that the proposals regarding reduction/abolition of taxes/duties being levied on various equipments and materials used in Solar Thermal Energy Sector and Wind Energy Sector of renewable energy are under consideration of the Ministry of Finance. As the proposals sent by the MNRE this year are vital in nature, the Committee desire that the matter may be pursued with the Ministry of Finance for early approval so that the renewable energy programmes gets fresh momentum.

NEW DELHI;
December 16, 2009
Agrahayana 25, 1931 *(Saka)*

MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy.

ANNEXURE-I

(*Vide* Para No. 8 of the Report)

11th PLAN—PROGRAMME-WISE BREAK-UP OF APPROVED OUTLAY (GBS) AND EXPENDITURE DURING FIRST 3 YEARS VIZ. 2007-08, 2008-09 AND 2009-10(UPTO 31.07.2009)

(Rs. in crore)

S. No.	Programme Component	2007-08		2008-09		2009-10		Total	
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp. (upto 31.07.09)	Outlay	Exp.
1.	Grid-Interactive & Distributed Renewable Power	110	87.92	150	116.20	220	76.72	480	280.84
2.	Renewable Energy for Rural Applications	200	190.29	160	151.19	155	31.34	515	372.82
3.	Renewable Energy for UIC Applications	80	22.22	26	16.55	75	6.74	181	45.51
4.	Research, Design & Development in RE	60	31.74	100	27.80	78	5.95	238	65.49
5.	Supporting programmes	130	131.85	170	126.92	82	21.26	382	280.03
6.	Spillover liabilities of 10th Plan programmes	25	4.96	5	2.12	2	0.33	32	7.41
	DOMESTIC BUDGETARY SUPPORT (DBS)	**605**	**468.98**	**611**	**440.78**	**612**	**142.34**	**1828**	**1052.10**
7.	Externally Aided Projects (EAP)	23	9.74	9	1.00	8	0.15	40	10.89
	Total GROSS BUDGETARY SUPPORT (GBS)	**628**	**478.72**	**620**	**441.78**	**620**	**142.49**	**1868**	**1062.99**

ANNEXURE-II

(*Vide* Para No. 8 of the Report)

11th PLAN — TARGETS AND ACHIEVEMENT DURING 2007-08, 2008-09 AND 2009-10 AND TOTAL 11th PLAN (AS ON 31.07.2009)

S. No.	Programme/system		2007-08		2008-09		2009-10		Total 11th Plan	
			Target	Ach.	Target	Ach.	Target.	Ach. (31.07.09)	Target	Achs. (upto 31.7.09)
1	2		3	4	5	6	7	8	9	10
GRID POWER (Capacities in MW)										
1.	Wind Power		1500.00	1663.50	2000.00	1485.50	2500.00	222.00	6000.00	3371.00
2.	Small Hydro		200.00	204.75	250.00	248.93	300.00	31.00	750.00	484.68
3.	Bio Power		275.00	81.00	300.00	97.50	405.00	70.00	980.00	248.50
4.	Bagasse Cogeneration			185.00		247.90		106.00		538.90
5.	Waste to Power	Urban	2.00	-	5.00		15.00		22.00	
		Indstl.	10.00	11.72	8.00	3.66			18.00	15.38
6.	Solar Power				14.00		4.00		18.00	
	Total		**1987.00**	**2145.97**	**2577.00**	**2083.49**	**3224.00**	**429.00**	**7788.00**	**4658.46**

1	2		3	4	5	6	7	8	9	10
OFF–GRID (Capacities in MWeq)										
7.	Waste to Power	Urban	3.00	3.00	5.00		10.00		18.00	3.00
		Indstl.	5.00	4.00	7.00	7.36			12.00	11.36
8.	Non-bag Cogen		20.00	49.20	30.00	75.77	50.00	5.00	100.00	129.97
9.	Gasifiers	Rural	1.00	1.02	1.00	1.03	3.00	0.06	5.00	2.11
		Indstl.	10.00	11.62	10.00	13.20	10.00	1.50	30	26.32
10.	Aero-Gens/Hybrid systems		0.15	0.11	0.30	0.11	0.30		0.75	0.22
11.	SPV Plants + Street Lights		-	0.33	-	1.00	5.00	-	5.00	1.33
12.	Water Mills (WMs)/ Micro/mini-hydel plants		-	0.37	- (144 nos. WMs)	0.70	17.50 (339 nos. WMs)	1.75	17.50 (19 nos. WMs)	2.82
	Total		39.15	69.65	53.30	99.17	95.80	6.56	188.25	177.13
DECENTRALISED RENEWABLE ENERGY SYSTEMS AND OTHER PROGRAMMES										
13.	Remote Village Electrification (No. of Villages+ Hamlets)		2000	1992 Sanctioned/ 1280 completed	1500	636 Sanctioned/ 325 completed	1500		5000	2628 Sanctioned/ 1605 completed

1	2	3	4	5	6	7	8	9	10
14.	Family type Biogas Plants (No. in Lakh)	1.00	0.89	1.24	1.08	1.50	0.03	3.74	2.00
15.	SPV Home Light Systems (Nos.)		57,382		65,904	4			123286
16.	SPV Lanterns (Nos.)		46958		56,397				103355
17.	SPV Pumps (Nos.)	100	42		56				98
18.	Solar Water Heating – collector area (Million sq. meter)	0.60	0.45	0.60	0.56	0.60		1.80	1.01
19.	Solar Cookers (Nos.)	20,000	20,165	20,000	20,590	20,000		60,000	4075
20.	Wind Pumps (Nos.)	140	80	100				240	80

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

ANNEXURE III

(Vide Para No. 13 of the Report)

DEMANDS FOR GRANTS OF THE MINISTRY OF NEW AND RENEWABLE ENERGY, 2009-10

DEMAND NO. 67

Ministry of New and Renewable Energy

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

(In crores of Rupees)

	Major Head	Budget 2008-2009			Revised 2008-2009			Budget 2009-2010		
		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
	1	2	3	4	5	6	7	8	9	10
	Revenue	586.80	7.09	593.89	469.20	9.60	478.80	597.20	11.00	608.00
	Capital	30.20	—	30.20	30.20	—	30.20	19.80	—	19.00
	Total	617.00	7.09	624.09	499.40	9.60	509.00	617.00	11.00	628.00
1. Secretariat-Economic Services	3451	10.50	7.09	17.59	13.29	9.60	22.89	13.50	11.00	24.50
New and Renewable Energy										
2. Solar Energy Programme	2810	114.45	—	114.45	82.89	—	82.89	—	—	—
	3601	0.50	—	0.50	0.01	—	0.01	—	—	—

		1	2	3	4	5	6	7	8	9	10
		3602	0.60	—	0.60	0.11	—	0.11	—	—	—
		4810	0.20	—	0.20	0.20	—	0.20	—	—	—
		Total	115.75	—	115.75	83.21	—	83.21	—	—	—
3.	Biogas Programme & NBB	2810	55.00	—	55.00	44.00	—	44.00	—	—	—
		3601	10.00	—	10.00	17.00	—	17.00	—	—	—
		Total	65.00	—	65.00	61.00	—	61.00	—	—	—
4.	Wind Energy Programme	2810	22.25	—	22.25	19.50	—	19.50	—	—	—
5.	Bio-mass Programme	2810	50.00	—	50.00	33.85	—	33.85	—	—	—
6.	Integrated Rural Energy Programme	3601	4.00	—	4.00	3.00	—	3.00	—	—	—
7.	Other Sources of Energy	2810	88.25	—	88.25	81.35	—	81.35	—	—	—
		3601	1.00	—	1.00	1.00	—	1.00	—	—	—
		3602	0.25	—	0.25	—	—	—	—	—	—
		Total	89.50	—	89.50	82.35	—	82.35	—	—	—
8.	Energy from Urban and Agricultural Wastes	2810	25.50	—	25.50	13.55	—	13.55	—	—	—
9.	National Institute of Renewable Energy	2810	7.00	—	7.00	3.50	—	3.50	—	—	—

		1	2	3	4	5	6	7	8	9	10
10.	Other Items	2810	135.50	—	135.50	97.95	—	97.95	—	—	—
11.	Grid Interactive and Distributed Renewable Power	2810	—	—	—	—	—	—	185.00	—	185.00
12.	Renewable Energy for Rural Applications	2810	—	—	—	—	—	—	118.00	—	118.00
		3601	—	—	—	—	—	—	10.00	—	10.00
		Total	—	—	—	—	—	—	128.00	—	128.00
13.	Renewable Energy for Urban, Industrial and Commercial Applications	2810	—	—	—	—	—	—	74.80	—	74.80
		3602	—	—	—	—	—	—	0.20	—	0.20
		Total	—	—	—	—	—	—	75.00	—	75.00
14.	Research, Design & Development in Renewable Energy	2810	—	—	—	—	—	—	74.80	—	74.80
		4810	—	—	—	—	—	—	0.20	—	0.20
		Total	—	—	—	—	—	—	75.00	—	75.00
15.	Supporting Programmes	2810	—	—	—	—	—	—	56.90	—	56.90

		1	2	3	4	5	6	7	8	9	10
16.	Other Expenditure	2810	—	—	—	—	—	—	0.25	—	0.25
		3601	—	—	—	—	—	—	1.75	—	1.75
		Total	—	—	—	—	—	—	2.00	—	2.00
17.	Investment in Public Enterprises	4810	30.00	—	30.00	30.00	—	30.00	19.60	—	19.60
18.	Lumpsum provision for N.E. Region & Sikkim	2552	62.00	—	62.00	58.20	—	58.20	62.00	—	62.00
	Grand Total		617.00	7.09	624.09	499.40	9.60	509.00	617.00	11.00	620.00
B. Investment in Public enterprises		Head of Dev.	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total
17.01	Indian Renewable Energy Development Agency	12810	30.00	647.00	677.00	30.00	647.00	677.00	19.60	726.78	746.38
		Total	30.00	647.00	677.00	30.00	647.00	677.00	19.60	726.78	746.38
C. Plan Outlay*											
1.	New and Renewable Energy	12810	558.00	647.00	1205.00	441.80	647.00	1088.80	558.00	726.78	1284.78
2.	North Eastern Areas	22552	62.00	—	62.00	58.20	—	58.20	62.00	—	62.00
		Total	620.00	647.00	1267.00	500.00	647.00	1147.00	620.00	726.78	1346.78
Demand No. 101		12810	3.00	—	3.00	0.60	—	0.60	3.00	—	3.00

*Inclusive of works outlay provided in the Demands of Ministry of Urban Development.

ANNEXURE IV

(*Vide* Para No. 40 of the Report)

STATEWISE NUMBERS AND AGGREGATE CAPACITY OF SHP PROJECTS (UPTO 25 MW) POTENTIAL, INSTALLED & UNDER IMPLEMENTATION

Sl. No.	State	Potential		Projects Installed		Projects under Implementation	
		Nos.	Total Capacity	Nos.	Capacity (MW)	Nos.	Capacity (MW)
1	2	3	4	5	6	7	8
1.	Andhra Pradesh	489	552	59	180.83	22	69.10
2.	Arunachal Pradesh	566	1333	81	61.320	43	25.94
3.	Assam	60	213	4	27.110	4	15.00
4.	Bihar	94	213	12	54.600	4	3.40
5.	Chhattisgarh	164	706	6	19.050	1	1.00
6.	Goa	9	9	1	0.050	—	—
7.	Gujarat	292	196	2	7.000	2	5.00
8.	Haryana	33	110	6	68.700	4	10.80
9.	Himachal Pradesh	547	2268	81	240.915	57	204.10
10.	Jammu & Kashmir	246	1411	33	121.830	5	5.91
11.	Jharkhand	103	208	6	4.050	8	34.85
12.	Karnataka	128	643	85	588.45	23	121.70
13.	Kerala	247	708	19	133.87	2	3.20
14.	Madhya Pradesh	99	400	10	71.160	4	19.90
15.	Maharashtra	253	762	29	211.325	19	76.70
16.	Manipur	113	109	8	5.450	3	2.75
17.	Meghalaya	102	229	4	31.030	3	1.70
18.	Mizoram	75	166	18	24.470	1	8.50

1	2	3	4	5	6	7	8
19.	Nagaland	99	196	10	28.670	4	4.20
20.	Orissa	222	295	8	64.300	6	23.93
21.	Punjab	234	390	29	123.900	24	32.70
22.	Rajasthan	67	63	10	23.850	—	—
23.	Sikkim	91	265	16	47.110	2	5.20
24.	Tamil Nadu	176	499	15	90.05	4	13.00
25.	Tripura	13	46	3	16.010	—	—
26.	Uttar Pradesh	220	292	9	25.100	—	—
27.	Uttarakhand	458	1609	93	127.92	52	239.45
28.	West Bengal	203	393	23	98.400	16	79.25
29.	A&N Islands	12	8	1	5.250	—	—
	Total	5415	14,292	682	2502.24	313	1007.28

ANNEXURE V
(*Vide* Para No. 76 of the Report)

NOTE ON THE STATUS OF PROJECTS ON ENERGY RECOVERY FROM URBAN WASTES

Projects completed

Three projects for energy recovery from Municipal Solid Wastes with an aggregate capacity of 17.6 MW have been set up in Hyderabad, Vijayawada and Lucknow. The commissioning of the project in Lucknow was suspended due to certain operational problems, however, efforts are being made for reviving it by a change in management of the promoter company.

Other urban waste projects include:

- 1 MW project based on cattle dung at Haebowal, Ludhiana;
- 4x 3.5 MW capacity power generation from biogas available at STPs in Surat;
- 150 kW plant for vegetable market and slaughterhouse wastes in Vijayawada; and
- 300 kW project based on vegetable market waste at Chennai.

Projects in pipeline

One project of 8 MW power generation capacity taken up under public-private partnership has been sanctioned for the city of Bangalore in the year 2008-09. This project is under execution and is expected to be commissioned by June, 2010.

Work on two projects of 16 and 10 MW capacities in Delhi taken up under public-private partnership is also expected to commence shortly.

Setting up of power generation projects based on MSW has been cleared for three cities by the Govt. of Andhra Pradesh.

Proposals are under development for projects on energy recovery from municipal solid wastes for a few other cities namely Guwahati, Kanpur, Kota, Mumbai and Pune.

Projects on production of fuel pellets from MSW have been taken up in the cities of Ajmer, Chandigarh, Jaipur, Rajkot, etc.

ANNEXURE VI

MINUTES OF THE SECOND SITTING OF THE STANDING COMMITTEE ON ENERGY (2009-10)

The Committee sat on Tuesday, the 6th October, 2009 from 1100 hrs to 1345 hrs in Committee Room 'D' Parliament House Annexe, New Delhi.

PRESENT

Shri Mulayam Singh Yadav — *Chairman*

MEMBERS

Lok Sabha

2. Mohammad Azharuddin
3. Shri P.C. Chacko
4. Shri Adhir Ranjan Chowdhury
5. Shri Ram Sundar Das
6. Shri Paban Singh Ghatowar
7. Shri Arjun Munda
8. Shri Jagdambika Pal
9. Shri Ravindra Kumar Pandey
10. Shri Nityananda Pradhan
11. Shri M.B. Rajesh
12. Shri Ganesh Singh
13. Shri Radha Mohan Singh
14. Shri Vijay Inder Singla

Rajya Sabha

15. Shri Motilal Vora
16. Shri Santosh Bagrodia
17. Shri Rama Chandra Khuntia
18. Shri Bhagat Singh Koshyari
19. Shri Shyamal Chakraborty
20. Shri Govindrao Wamanrao Adik
21. Shri Mohammad Shafi

SECRETARIAT

1. Shri Brahm Dutt	—	*Joint Secretary*
2. Shri Shiv Singh	—	*Director*
3. Shri Shiv Kumar	—	*Additional Director*
4. Shri Rajesh Ranjan Kumar	—	*Deputy Secretary*

REPRESENTATIVES OF THE MINISTRY OF NEW AND RENEWABLE ENERGY

1.	Shri Ramesh C. Mishra	Additional Secretary & FA
2.	Ms. Gauri Singh	Joint Secretary
3.	Shri K.P. Sukumaran	Scientist 'G'
4.	Dr. B. Bandopadhyay	Scientist 'G'
5.	Dr. A.R. Shukla	Scientist 'G'
6.	Dr. B.M.S. Bist	Scientist 'G'
7.	Dr. Gomathi Nayagam	Executive Director (C-WET)

At the outset, the Chairman welcomed the Members of the Committee and representatives of the Ministry of New and Renewable Energy to the sitting of the Committee. The Ministry was represented by an Additional Secretary who, on a request made by the Secretary, MNRE was permitted by the Chairman under Direction 59(1) to represent the Ministry.

2. The representatives of the Ministry made a power-point presentation on overall functioning of the Ministry, targets and achievements under various programmes and, in particular, on Demands for Grants of the Ministry of New and Renewable Energy for the year 2009-10.

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

(i) Year-wise Gross Budgetary Support and Internal & Extra Budgetary Resources available with the Ministry.

ii) Year-wise outlays and actual expenditure of the Ministry.

(iii) Low utilization of funds/low achievement of targets by the Ministry

(iv) Need for tapping the renewable power potential in the country.

(v) Solar Energy, Wind Energy, Small Hydro Power, Biomass, Biogas and Remote Village Electrification Programme, etc.

(vi) Need for more Research and Development activities in Renewables.

(vii) Subsidies from the Government of India under various programmes of the Ministry.

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

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

The Committee then adjourned.

MINUTES OF THE SIXTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2009-10)

The Committee sat on Monday, the 14th December, 2009 from 1500hrs to 1530 hrs in Committee Room 62, Parliament House, New Delhi.

PRESENT

Shri Santosh Bagrodia — *in the Chair*

MEMBERS

Lok Sabha

2. Mohammad Azharuddin
3. Shri Paban Singh Ghatowar
4. Shri Jagdambika Pal
5. Shri Ravindra Kumar Pandey
6. Shri Nityananda Pradhan
7. Shri Ganesh Singh
8. Shri Subhash Bapurao Wankhade

Rajya Sabha

9. Shri Rama Chandra Khuntia
10. Shri Bhagat Singh Koshyari
11. Shri Shivpratap Singh
12. Shri Shyamal Chakraborty
13. Shri Govindrao Wamanrao Adik
14. Shri Mohammad Shafi

SECRETARIAT

1. Shri Brahm Dutt — *Joint Secretary*
2. Shri Rajesh Ranjan Kumar — *Deputy Secretary*

2. In the absence of the Chairman, the Committee chose Shri Santosh Bagrodia, a Member of the Committee to act as Chairman for the sitting in accordance with Rule 258 (3) of the Rules of Procedure and Conduct of Business in Lok Sabha.

3. * * * * * * *
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4. The Committee then took up for consideration the following draft Reports:

(i) Draft Report on the Demands for Grants (2009-10) of the Ministry of Power.

(ii) Draft Report on the Demands for Grants (2009-10) of the Ministry of New and Renewable Energy.

(iii) Draft Report on Action Taken by the Government on the Recommendations contained in the 31st Report (14th Lok Sabha) on the subject 'Implementation of Rajiv Gandhi Grameen Vidyutikaran Yojana'.

The Committee adopted the draft Reports without any change(s)/ modifications.

5. The Committee also authorized the Chairman to finalize the above-mentioned Reports taking into consideration consequential changes arising out of factual verification, if any, by the concerned Ministries and also to present the same to both the Houses of Parliament.

The Committee then adjourned.