

11

**STANDING COMMITTEE
ON ENERGY
(2009-2010)**

FIFTEENTH LOK SABHA

MINISTRY OF NEW AND RENEWABLE ENERGY

**RENEWABLE ENERGY FOR RURAL
APPLICATIONS**

ELEVENTH REPORT



सत्यमेव जयते

**LOK SABHA SECRETARIAT
NEW DELHI**

August, 2010/Shravana, 1932 (Saka)

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RENEWABLE ENERGY FOR RURAL
APPLICATIONS

Presented to Lok Sabha on 21.08.2010

Laid in Rajya Sabha on 21.08.2010



LOK SABHA SECRETARIAT
NEW DELHI

August, 2010/Shravana, 1932 (Saka)

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COMPOSITION OF THE STANDING COMMITTEE ON ENERGY
(2009-2010)

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Retired from Rajya Sabha *w.e.f.* 04.07.2010

* Nominated *w.e.f.* 26.02.2010

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this Eleventh Report on 'Renewable Energy for Rural Applications'.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 27th January, 2010. The Committee wish to express their thanks to the representatives of the Ministry for appearing before the Committee for evidence and furnishing the information, desired by the Committee in connection with the issues relating to the subject.

3. The Report was considered and adopted by the Committee at their sitting held on 10th August, 2010.

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;
18 August, 2010

27 Shravana, 1932 (Saka)

MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy.

REPORT

PART I

NARRATION ANALYSIS

I. INTRODUCTORY

1.1 The role of new and renewable energy has been assuming increasing significance with the growing concern for the country's energy security. The Ministry of New and Renewable Energy has a wide range of programmes on promotion of renewable energy for rural, urban, commercial and industrial applications through grid-interactive power generation and off-grid/distributed renewable power projects and on research and development as well.

1.2 Renewable energy applications have brought about significant changes in the Indian energy scenario. Apart from electricity generation, which has now started contributing in the national electricity mix, the application of these technologies has benefitted millions of rural folk by meeting their cooking and other energy requirements in an environmentally benign way. The social and economic benefits include reduction in drudgery among rural women and girls engaged in the collection of fuel wood from long distances and cooking in smoky kitchens, minimization of the risks of contracting lung and eye ailments, reduction in deforestation, employment generation at village level and ultimately the improvement in the standard of living and creation of opportunity for economic activities at village level.

1.3 In 1947, only 1500 villages were electrified in India. The per capita consumption was 14 units. The initial focus was on 'electrification for irrigation' to enhance agricultural produce. As per the National Electricity Policy, 2005, about 56 per cent of rural households have not been electrified. The Government had started Rajiv Gandhi Grameen Vidyutikaran Yojana in April, 2005 for achieving the National Common Minimum Programme objective of providing access to electricity to all Rural Households in a specified period of time. According to the Ministry of Power, a target to electrify 1,14,500 unelectrified villages was set under this scheme, out of which 80,430 villages (70.2%) were electrified till 31st May, 2010.

1.4 In the rural areas, where the grid connectivity is not feasible, application of renewable energy becomes all the more important. The Ministry of New and Renewable Energy (MNRE) have reportedly been supporting programmes for the development of renewable energy systems and devices such as biogas plants, solar home-lighting systems, biomass gasifiers, solar cookers, other solar thermal systems and small aero-generators/hybrid systems in rural areas of the country. The Ministry has also been implementing remote village electrification, village energy security test projects and decentralized biogas-based power generation programmes.

1.5 The MNRE is providing central financial assistance ranging from about 30% to 90% of costs of for deployment of various types of renewable energy systems/devices in rural areas for meeting different energy needs depending on the technology employed, location and user category. In order to encourage and promote further upscaling of such systems, schemes of the Ministry are being suitably modified. The Ministry has also extended its outreach to Regional Rural Banks (RRBs) to encourage them to finance solar home lighting systems for rural areas where grid may not have reached or has reached but is not reliable. Other steps include creation of publicity and awareness on the need and usefulness of renewable energy systems/devices through electronic and print media and organization of training programmes.

1.6 Various programmes of the Ministry are implemented in States primarily by the State Nodal Agencies (SNAs) notified by the State Governments for renewable energy development. These Agencies generally report to the State Energy Departments and are responsible for formulation/verification of project proposals, actual implementation and monitoring of the programmes and disbursement of Central Financial Assistance (CFA) to beneficiaries. State Governments have the key responsibility of making counterpart budget provisions for proper functioning of the SNAs as well as for implementation of various programmes in the States. Funds are released to SNAs under most of the programmes and they are required to submit periodic progress reports and a funds utilization certificate on actual implementation.

II. BUDGETARY ALLOCATION AND TARGETS

1.7 The main programmes covered by the Ministry under Renewable Energy for Rural Energy for Rural Applications are as follows:—

I. Programme for Remote Villages:—

- (i) Remote Village Electrification Programme: It aims at provision of lighting/electricity in the unelectrified remote villages/hamlets where grid connectivity is not being provided in the short-term under the Rajiv Gandhi Grameen Vidyutikaran Yojana of the Ministry of Power. Such villages/hamlets are being covered mainly with Solar PV home lighting systems.
- (ii) Village Energy Security Test Projects: For meeting the energy requirements of remote villages of cooking, lighting and motive power, through locally available renewable resources, mainly biomass, with active community participation.

II. Programmes for All Villages:—

(iii) Biogas Programme:

- Support for setting up of Family Type biogas plants and linking sanitary toilets with biogas plants.

(iv) Solar Thermal Systems:

- Deployment of decentralized solar thermal systems/devices, mainly solar cookers/driers for applications of cooking, drying farm produce.

1.8 The Programme-wise targets and achievements, fund allocation and their utilisation during the 10th Five Year Plan in respect of major Rural Energy Programmes furnished by the Ministry of New and Renewable Energy are as under:—

(Rs. in crore)

Programme	Physical		Financial	
	Target	Achievement	B.E./R.E.	Actual
Biogas	5.88 lakh plants	5.63 lakh plants	208.63/207.88	183.52
Remote Village Electrification Programmes (No. of villages/hamlets)	5,000	Sanctioned =5,163 Completed =2,860	611.50/274.80	247.00
SPV Decentralised SPV Systems/Devices	10.83 MWp	8.164 MWp	167.50/181.70	153.22

1.9 As per the Mid-Term Appraisal of the 11th Plan period pertaining to renewable energy for Rural Application, the sector-wise targets and budget allocation are as under:—

- Provision of basic electricity/lighting facility through SPV/ other RE systems and devices, including DPRS, in 10000 remote villages/hamlets with an outlay of Rs. 1550 crore.
- Village Energy Security Projects in 1000 villages/hamlets with an outlay of Rs. 225 crore.
- Solar thermal systems aggregating 1.6 mln. Sqm. Collector area, with an outlay of Rs. 225 crore.
- Family type Biogas Plants: 2 million m³ with an outlay of Rs. 250 crore.
- BOVs/Hybrids/SPV devices/other RE devices on extension basis with outlay of Rs. 250 crore.

1.10 On being asked about the revised plan/programmes in rural programme and achievement (both Physical and financial) of the 11th Plan, the Ministry in a note informed:—

“The Revised Allocation under rural programmes during the 11th Plan Period as per Mid-Term Appraisal are as follows:—

(Rs. in crore)

Programme	Revised Allocation
Biogas	450
Remote Village Electrification Programme	600
Decentralised SPV Systems/Devices	400

The physical and financial achievement during the first 3 years (upto 31st Jan 2010) of the 11th Five Year Plan under these programme are as follows:—

(Rs. in crore)

Programme	Physical		Financial	
	Target	Achievement (upto 31.1.2010)	B.E.	Actual
Biogas	3.78 lakh plants	2.54 lakh plants	162.00	171.51
Remote Village Electrification Programme (No. of villages/Hamlets)	5,000	Sanctioned=3,382 villages Completed=2,378 villages	303.00	272.50
Decentralised SPV System/Devices	On project to project bases	1.46 MWp	150.25	147.80

1.11 The details of the Proposed Targets/Outlay, Approved Outlay and Revised Projections for rural energy system for 11th Plan as per the Mid-term Appraisal of the Ministry of New and Renewable Energy are shown at *Annexure-I*.

1.12 Details of programme-wise physical targets/achievements and financial outlays/expenditure pertaining to grid-interactive, off-grid/distributed power and decentralized renewable energy system/programmes which include rural energy programmes, during the first three years of the 11th Five year Plan are also shown at *Annexure-II*.

III. REMOTE VILLAGE ELECTRIFICATION PROGRAMME

1.13 The Remote Village Electrification Programme aims at providing basic lighting/electricity facilities through renewable energy systems in those unelectrified remote census villages and hamlets where grid connectivity will not be provided in near future under Rajiv Gandhi Grammeen Vidyutikaran Yojana.

1.14 According to the MNRE, the main renewable energy options for lighting/electrification in remote villages are:—

- Small hydro power plants;
- Biomass gasification systems in conjunction with 100% producer gas engines or with dual-fuel engines using non-edible vegetable oils;
- Non-edible vegetable oil based engines;
- Biogas engines;
- Solar photovoltaic power plants and
- SPV homelighting systems.

1.15 The Ministry have further stated that in many situations, particularly in very small and very remote villages, no other renewable energy option except SPV homelighting systems may prove to be feasible. The Rural Electrification Policy has now laid down that in “villages/habitations where grid connectivity would not be feasible or not cost effective, off-grid solutions based on stand-alone systems may be taken up for supply of electricity. Where these also are not feasible and if only alternative is to use isolated lighting technologies like solar photovoltaic, these may be adopted. However, such remote villages may not be designated as electrified.”

1.16 On being asked about the number of villages/hamlets electrified/illuminated under the various programmes/schemes of the Remote Village Electrification Programme, the Ministry in a note stated as under:—

“The decision to use a particular renewable energy technology out of technically possible ones, is taken by the state implementing agency after considering the resource availability, ease of operation, cost economics and long term sustainability. The details of projects

taken up so far with small hydro, biomass gasification, SPV Power plants and SPV homelighting systems are as follows:—

Technology Used	No. of villages/ Hamlets Sanctioned
Micro Hydro	230
Biomass Gasification	37
Solar Power Plant	410
Solar Homelighting Systems	9424

Total No. of covered villages and hamlets	10014
Completed	6419
Under Implementation	3123"

1.17 Enquired as to whether the Ministry have allotted budget separately under each programme, the Committee have been informed that technology-wise budget is not allocated under Remote Village Electrification Programme.

1.18 The Committee pointed out that against the target of 1500 villages and hamlets in 2008-09, only 325 villages and hamlets could be electrified and during 2009-10, electrification of only 700 villages and hamlets could be completed (till 31st October, 2009) against the target of 1500 villages and hamlets. On being asked about the reasons for less achievement so far during 11th Plan period and the corrective measures being undertaken by the Ministry to achieve the target set for the current plan period, the Ministry in a written reply stated:—

“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 of financial support become at the best notional in light of the initial indications received from the States for the no. of villages they may be required to cover. 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 by that time. 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. In general, all eligible proposals received from States for

coverage of remote villages/hamlets under the Programme are sanctioned financial support.

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. The Ministry continues to follow up with the respective States to persuade them to expedite the implementation.

During the 11th Plan, support for 3382 villages and hamlets has been sanctioned as on 28-2-2010 which includes 754 villages and hamlets provided support during 2009-10. Further, 2378 villages/hamlets have been completed during this period (including from those sanctioned during the 10th Plan). Efforts are being made with States to get more proposals after identification of villages, so that the 11th Plan targets could be achieved."

1.19 In view of the fact that the villages and hamlets which are not being taken up under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) of Ministry of Power are to be covered under Remote Village Electrification Programme (RVEP) of Ministry of New and Renewable Energy, the Committee desired to know whether any MoU/agreement has been signed by the two Ministries in this regard. The Ministry of New and Renewable Energy informed that the two Ministries have not signed any MoU in this connection.

1.20 On being asked about the coordination mechanism of the Government in context of RGGVY and RVEP, the Ministry of New and Renewable Energy informed:—

"The Ministry has set up a Coordination Committee under the chairmanship of Secretary, Ministry of New and Renewable Energy, with representation from Ministry of Power, Rural Electrification Corporation, Planning Commission and Ministry of Panchayati Raj. The Committee meets frequently to sort out issues related to coordination between the two Programmes. Further, Ministry takes up only those villages and hamlets which have been endorsed by REC for non-inclusion under Rajiv Gandhi Grameen Vidyutikaran Yojana. This prevents duplication of support from the Central Government. The dual mechanism has so far proved to be effective in proper coordination between the two programmes."

1.21 As regard the constraints being faced in implementation of the RVE Programme, the Ministry in a note elaborated as under:—

- “1. Change in plans by the State Governments for coverage of villages through grid extension rather than covering them through renewable energy sources, after identification of remote villages and hamlets by REC. In absence of firm state plans for coverage of all unelectrified villages, it becomes difficult to chalk out the strategy and also estimate the quantum of effort. Ministry of Power has also been asking the States to finalize village electrification plans for all the unelectrified villages. However, the progress in this regard is slow.
2. Lack of provision for State financial contribution, which places undue burden on the beneficiaries, who generally belong to very poor category. Although the States undertake to provide at least half of the balance funds, at the time of implementation these are not made available to the implementing agencies. Thus, all the balance costs have to be borne by beneficiaries which places undue burden on them.
3. Disturbed conditions in the remote villages, particularly in certain pockets of Assam and other North Eastern States, Chhattisgarh, Jharkhand, etc.
4. Logistic problems due to extremely remote location of the villages and hamlets.
5. Lack of adequate organizational and financial resources with the State implementing agencies. The Ministry has been advising the States to strengthen the implementing agencies so that the projects could be implemented smoothly and expeditiously. However, in most States, the agencies are extremely understaffed and they do not even have basic infrastructural facilities to service large number of villages in remote areas. Non-Plan/Plan provisions for maintenance and support, particularly after implementation, are very essential. Yet, such provisions have not been made. Although the Ministry provides a substantial service charge to the implementing agencies, in addition to CFA, in many cases the implementing agencies cannot freely incur expenditure out of these funds.
6. Lack of coordination at the State level between the implementing agencies of RGGVY and those of RVE. Due to this, some amount of overlapping has been observed between

the two schemes. Moreover, this also delays the process of identification of villages to be taken up under the Remote Village Electrification Programme.”

1.22 The Secretary, Ministry of New and Renewable Energy also apprised the Committee about the implementation of RVEP and coordination of the Ministry with State Governments, during the evidence held on 27th January, 2010. The Secretary said:—

“Schemes related to renewable energy are implemented in two ways, We have to make a policy framework as to whether this will be implemented by the private sector or by the State Government. We have pointed out that the State Government have not paid adequate attention to the implementation of the said scheme and perhaps it is a major constraint in the way of implementation we would like you to ask the State Government to make arrangements for implementation in their respective States and we will also make all out efforts in this direction as with the passage of time everyone feels that renewable energy is required to be promoted. That’s why the States should streamline their system of implementation.”

1.23 On being asked about the efforts being made/proposed to be made by the Ministry to remove the constraints, the Committee were informed:—

“The Ministry has been playing a very proactive role for resolution of the above listed constraints. Regular meetings with all the concerned departments/agencies are held to remove the bottlenecks in smooth implementation. Such meetings have been held in the recent past at the levels of Chief Ministers of the States, Chief Secretaries, Principal Secretaries, Chairman, State Electricity Boards, Heads of implementing agencies, etc. As an example, for Assam, which is implementing the largest component of the Programme, as many as 7 meetings have been held, including two at the level of Chief Ministers, to expedite the implementation. Frequent consultations are also held with suppliers, local NGOs, representatives of beneficiaries, etc. As a result of the sustained efforts over last 1 and ½ years, the Ministry is hopeful that all projects sanctioned before 2008-09, will be completed by March, 2010. Detailed action plans have been drawn up with the implementing agencies for this purpose.”

1.24 The Ministry are implementing a project on Electrification/illumination of all villages in the border districts of Arunachal Pradesh, when asked whether there is any proposal for such projects for the

remaining North-Eastern States which are lying along the sensitive border areas, the Committee have been informed:—

“A meeting of all the NE States was organised in the Planning Commission, at the instance of MNRE, on 26th June, 2009 to discuss implementation of SHP, RVE and other programmes. The States were requested to identify villages, including villages located near international borders, to be taken up for electrification/illumination through solar or micro hydel. Further, Secretary MNRE had a meeting with the Planning Commission and Secretary, DoNER on 5th February, 2010 to discuss implementation and mobilisation of State funds for RVE and small/micro hydel projects in NE States. It may be mentioned that the Ministry is already supporting electrification/illumination of remote villages, including border villages, in the NE States, identified by the concerned Power Departments, which are not covered under RGGVY programme. The Ministry is also supporting small hydro projects in all NE States.”

IV. VILLAGE ENERGY SECURITY PROJECTS (VESP)

1.25 Since the 10th Five Year Plan period, a limited number of Test Projects on village Energy Security are being taken up in very remote villages and hamlets that are unlikely to be electrified through conventional means. The Village Energy Security Test Projects (VESP) aim at meeting the total energy requirement such as cooking, lighting and motive power of villages, through locally available renewable energy resources, particularly biomass with active participation of the local communities, including women. According to the MNRE, the projects are environment-friendly and create avenues for local employment, thus improving the quality of life and leading to overall sustainable development. Test projects on village energy security are being taken up to demonstrate the techno-economic parameters, provide operational experience, mobilize local communities and firm up the institutional arrangements.

1.26 The activities envisaged under these projects are (a) identification of village/hamlet; (b) Preparation of a village Energy Plan, including assessment of resources, energy services required and configuration of energy production systems; (c) Formation of a Village Energy Committee; (d) Creation of Village Energy Fund; (e) Plantations/installation of energy production systems; (f) Operation and maintenance; and (g) Capacity building and training.

1.27 The energy production systems comprise improved chulhas; biogas plants based on dung/oil cakes or leafy biomass; biomass gasifiers coupled with 100% producer gas engines; and, biofuel based engines run on 100% Straight Vegetable Oils (SVO) to meet the lighting and motive power needs. Energy plantations are an integral part of these projects.

1.28 The test projects were being undertaken by the Gram Panchayats and facilitated by implementing agencies such as District Rural Development Agencies (DRDAs), Forest Departments and NGOs. Guidelines of VESP were revised in April, 2008 and State Nodal Agencies (SNAs) have also been included as implementing agencies.

1.29 As per the Annual Report of the MNRE (2009-10), 90 per cent of the project cost of the projects is met through a Central grant. The balance 10 per cent towards the project cost is to be mobilized by the Community/implementing agency/State Nodal Agency.

1.30 The State-wise break-up of VESPs sanctioned and commissioned, as furnished by the MNRE is as below:—

Sl. No.	Name of States	Implementing Agency	No. of test projects under implementation	No. of commissioned projects
1.	Assam	State Forest Department	14	4
2.	Chhattisgarh	State Forest Department/ CREDA(14) and NGO(1)	15	15
3.	Gujarat	NGO	2	2
4.	Jharkhand	NGO	3	—
5.	Madhya Pradesh	State Forest Department	9	8
6.	Maharashtra	NGO	10	3
7.	Orissa	State Forest Department(4) and NGO(11)	15	12
8.	Tamil Nadu	State Forest Department	4	4
9.	Uttarakhand	UTTARAKHAND Biofuel Board	4	4
10.	West Bengal	State Forest Department/WBREDA	4	2
		Total	80	54

1.31 The Physical achievement as on 30th June, 2009 is as under:—

Year	Physical Achievement
2007-08	-
2008-09	17
2009-10	- (upto 30.06.2009)

1.32 The MNRE have further informed that out of 54 projects commissioned, 27 projects are at various stages of implementation. The actual expenditure on these projects as on 30th June,2009 has been as follows:—

(Rs. in crore)

Year	BE/RE	Actual
2007-08	8.00/5.00	1.33
2008-09	15.00/7.00	5.39
2009-10	10.00/6.00	0.27 (upto 30.06.2009)

1.33 The Ministry have stated that initially they have proposed to cover 1000 villages under Village Energy Security Test Projects with a total outlay of Rs. 225 crores during 11th Plan through locally available renewable resources, particularly biomass, which was subsequently revised to 200 Test Projects by Standing Finance Committee (of MNRE) in its meeting held on 13th March, 2008.

1.34 On being asked to explain the reasons for less achievement under Village Energy Security Projects, the Ministry in a note stated:—

“It has not been possible to achieve the physical target of new Village Energy Security Test Projects due to non-receipt of viable proposals from SNAs and other implementing agencies as per the revised guidelines. Some of the barriers/challenges are:—

- (i) Identification/selection of appropriate remote and easily accessible village.
- (ii) Adequate community mobilization and social engineering by implementing agencies.
- (iii) Mobilization of 10% share in capital cost of the projects.
- (iv) Requirement of trained personnel for operation and maintenance.
- (v) Fixing and regular collection of user charges by Village Energy Committee.
- (vi) Convergence of other rural development schemes in the area for livelihood/income generating activities.
- (vii) Regular performance monitoring and feedback.

1.35 When asked about its action plan for achieving the target during the remaining period of 11th Plan, the Committee have been informed:—

“During Mid-Term Appraisal of 11th Plan in September, 2009, it was decided to concentrate on consolidating the projects already taken up for implementation and take up new villages only under the RVE Programme. Accordingly, during the remaining period of 11th Plan, only consolidation of VESPs activities will be undertaken.”

V. SOLAR PHOTOVOLTAIC (SPV) SYSTEM

1.36 Solar Photovoltaic (SPV) Technology enables direct conversion of sunlight into electricity. It has been reported that the daily solar radiation in India varies from 4KWh to 7KWh per sq.m. in different parts of the country and there are about 250-300 sunny days in a year in most of the areas. As abundant solar radiation is available in almost entire country, SPV systems can be used anywhere in the country. The SPV technology is used in both Grid-interactive and decentralized manner.

1.37 The MNRE have been providing Central Finance Assistance (CFA) for demonstration and utilization of SPV Systems such as solar home lighting systems, solar street lights, stand alone PV power plants, solar lanterns, solar pumps and other systems in rural areas of the country.

1.38 The MNRE also informed that the projects are being implemented in project mode through various implementing agencies including the Central and State Government organizations, State Nodal Agencies, NGOs, Public Sector Undertakings, Akshya Urja Shops, etc.

1.39 The overall targets and achievements and expenditure pattern during the first two years of the 11th Plan for various SPV systems, as furnished by the Ministry of New and Renewable Energy are given below:—

System	2007-08		2008-09		2009-10	
	Target	Ach.	Target	Ach.	Target	Ach.
Solar Lanterns (Nos.)	97,200	92,267	—	41,397	Project mode only	—
Solar Home Lighting Systems (Nos.)	68,250	52,262	—	50,904		—
Solar Street Lighting Systems (Nos.)	9,570	8,462	15831	7,391		—
SPV Water Pumping Systems	—	42	—	56		—
Standalone Power Plants (kWp)	—	—	3221.75	—		—
Total (MWp)	4.21	3.56	4.4	2.59	20 MW	

Expenditure Pattern

(Rs. in crores)

Year	BE	RE	Actual
2007-08	52.50	60.75	55.35
2008-09	87.25	67.35	62.45
2009-10 (up to 30.6.2009)	98.00	-	7.00

This includes expenditure on deployment of off-grid systems SPV Systems and of decentralized SPV systems in Urban areas also.

1.40 Asked about the availability of grid-interactive SPV power in rural areas, the Ministry in a written reply stated:—

“By February, 2010, two SPV power projects of about 1.0 MWp capacity each have been installed one by West Bengal Green Energy Development Corporation Limited, Kolkata at Jamuria village in Asansol district of West Bengal and another by a private developer at Awhan village in Amritsar district of Punjab. The Karnataka Power Corporation Limited has also set up two grid-connected SPV power plants of 3 MWp capacity each in the State. Electricity from these projects is being fed into the local grid.”

1.41 When asked to furnish details of the project-mode implementation of the Decentralised SPV system during the year 2009-10, the Ministry in a written reply informed:—

“Under the 2009-10 SPV Programme, projects for 34,800 solar lanterns were sanctioned in West Bengal (14,000 Nos for “Aila” affected families in Sunderbans), Tripura (20,000 Nos.) and Sikkim (800 Nos.).

Projects for installation of a total of 42,741 solar home lighting systems were sanctioned for Arunachal Pradesh (3,079 Nos.), Assam (71 Nos.), Gujarat (3,058 Nos.), Haryana (5,635 Nos.), Manipur (365 Nos.), Rajasthan (10,000 Nos.), Sikkim (750 Nos.) and West Bengal (19,783 Nos.). These systems are to be installed in unelectrified households/ villages, SC/ST and Minority populated villages, salt workers colonies, etc.

Projects for a total of 7,486 solar street lighting systems were sanctioned for installation in Assam (68 Nos.), Haryana (2,277 Nos.), Maharashtra (100 Nos.), Manipur (438 Nos.), Orissa (80 Nos.), Pudducherry (100 Nos.), Punjab (1,017 Nos.), Rajasthan (120 Nos.), Sikkim (30 Nos.), Uttar Pradesh (2,361 Nos.) and Uttarakhand (895 Nos.). These systems are to be installed in unelectrified villages, police stations, SC/ST and minority populated villages, etc.

Stand Alone/Roof Top Power Plants of 4,120 KWp aggregate SPV capacity were sanctioned for installation in Andhra Pradesh (630KWp), Chhattisgarh (1,410 KWp), Haryana (267 KWp) Karnataka

(156 KWp), Madhya Pradesh (165 KWp), Orissa (10 KWp), Rajasthan (568 KWp), Sikkim (1KWp), Tamil Nadu (10.5 KWP), Tripura (1 KWp), Uttar Pradesh (711 KWp), Uttarakhand (100 KWp) and The Energy and Resource Institute (TERI), New Delhi (90 KWp). These solar power plants would provide electricity to hospitals, educational institutions, housing colonies, ashrams, tribal hostels, police stations, para military force camps, bus stations, commercial establishments and for charging solar lanterns.

The aggregate SPV capacity of the above Off-grid systems and power plants, sanctioned during the 2009-10, is about 6.50 MWp.”

1.42 The head-wise details of the SPV systems sanctioned during the year 2009-10, as supplied by the Ministry are given below:—

Solar Lanterns	14,000
Solar home lighting systems	20148
Street lighting systems	20148
Stand-alone solar power plant	627 kWp

1.43 The Committee desired to know about the status of implementation of the sanctioned projects during 2009-10, the Ministry in a note stated:—

“Most of the SPV Projects sanctioned during 2009-10 are still under implementation, as the implementation period for these projects is in the range of 6 months to 1 year.

Some of the projects sanctioned during 2009-10 have already been installed. These include, distribution of 14,000 LED based solar lanterns among the “Aila” affected people in Sunderbans, West Bengal; 14,000 solar home lighting systems in West Bengal; 8,000 solar home lighting systems in Rajasthan; 100 street lighting systems in Maharashtra; 450 street lighting systems in Uttar Pradesh; 90 street lighting systems in Rajasthan and 500 street lighting systems in Uttarakhand. Moreover, 2 power plants of 5 KWp aggregate capacity in Andhra Pradesh and 10.5 KWp in Tamil Nadu, 171 kWp capacity in tribal hostels and ashrams in Chhattisgarh have been installed during the current year under the scheme for installation of solar lighting systems through loans from Regional Rural Banks (RRBs), 39,119 solar lighting systems have been installed in different States.

The SPV system installations, reported by the implementing agencies during 2009-10 upto 28.02.2010, out of the projects sanctioned during previous years, is given below:—

Solar Lanterns	68,999 nos.
Home Lighting Systems	33,767 nos.
Street Lighting Systems	8,680 nos.
SPV Pump	106 nos.
Power Plant	105.13 KWp

The aggregate SPV capacity of all the above Off-grid systems and power plants, installed during the year is about 3.06 MWp.

SPV systems are expensive and they need expenditure on operation and maintenance mainly on the replacement of batteries after 4-5 years.”

1.44 To a query as to whether the Ministry have initiated any efforts to make the operation and maintenance affordable to users in rural areas who generally belong to very poor category, the Committee have been informed:—

“The manufacturers/suppliers provide two years warranty and comprehensive maintenance contracts for next 3 years for the systems under the programme. Mainly the batteries and other components would need replacements for the systems beyond this period, which is expected to be met by the beneficiaries.”

1.45 Further, regarding maintenance of installed panels, the Secretary, Ministry of New and Renewabel Energy, during the evidence deposed before the Committee as under:—

“We have installed solar panels for remote village electrification. It is the responsibility of the people of those areas to maintain the facility which we have provided for them. You should not expect that any team from the Central Government will come to maintain these facilities. So, we have to create a perception among the people that we have already provided this facility and now they should take responsibility for maintenance of that facility.”

VI. SOLAR THERMAL ENERGY PROGRAMME

1.46 The solar thermal systems/activities of the Ministry for rural, urban, industrial and commercial applications include solar cookers, solar dryers, solar water heating systems, solar air heating/steam generating systems, green building and solar cities. Solar thermal demonstration programme of the Ministry aims at promoting solar thermal technologies to meet cooking energy needs with a view to demonstrate their effectiveness and potential in reducing dependence on traditional biomass and fossil fuels. As part of their demonstration scheme for North Eastern States including Sikkim, Islands and Jammu and Kashmir, the Ministry has implemented solar water heating systems.

1.47 Solar cooking is one of the important applications of solar thermal energy catering to energy requirements of the people for cooking in rural and urban areas. A scheme on promotion of both box type and dish solar cookers is under implementation by the Ministry and they have initiated an efforts to develop niche areas of applications including in mid day meal programme for schools, Aanganwaris, defense and paramilitary forces etc. It has been informed that under the scheme CFA of Rs. 1500/- is available to the users on procurement of dish solar cooker and for box cookers, promotional incentive of Rs. 100/- to 200/- on each cooker is available to implementing agencies for sale of cookers in their States. The Scheme also provides financial support to the manufacturers of solar cookers for obtaining BIS approval. The Ministry reported a total of around 6,39,000 box solar cookers and 10,200 dish solar cookers have been deployed so far in the country.

1.48 In response to a query as to whether the Ministry have any proposal/programme for distribution of solar cookers in the rural areas for domestic use, the Committee have been informed:—

“The Ministry are implementing a scheme on solar cookers for domestic use. Two types of solar cookers, namely, the dish solar cooker and box type solar cookers are being provided to the users. The incentives to the users and the State nodal agencies being provided by the Ministry are as follows:—

Type of Solar Cooker	Support to Users	Service Charges to SNAs for Implementation and Monitoring
Dish Solar Cooker (Diameter 1.4 m, minimum)	30% of total cost limited to Rs. 1500/-per cooker	Rs. 200/- per cooker
Box Type Solar Cooker	Nil	Rs. 50-200/- per cooker

However, sale of solar cookers is mainly reported in urban/semi-urban areas.”

1.49 Regarding the utility of solar dryers, the Ministry in a note stated:—

“Small capacity solar dryers for drying of food products are useful in rural areas and are being promoted through NGOs, women’s self help groups etc. These dryers have been employed for drying of mango pulp, fruit bars, turmeric, fish, etc. in various parts of the country. These are manufactured by a couple of manufacturers and are being supported by the Ministry by providing financial assistance up to 50% of the cost. Over 100 such units of capacity ranging up to 50 kg/batch are working in the country, mainly in Andhra Pradesh, Mizoram, Lakshadweep, Uttarakhand, Ladakh Haryana, Punjab and Uttar Pradesh.”

1.50 On being asked the availability of solar dryers at affordable cost for rural users, its price, manufacturer and its promotional programme, the Committee have been informed:—

“The cost of a small solar dryer of approximately 1 sqm area is around Rs. 12,000–Rs. 15,000. There are presently six known manufacturers of such dryers in the country. The Ministry is implementing a demonstration programme on Solar Dryer in rural areas for drying food products for preservation. Financial support of upto 50% of the cost of the dryers is available under this demonstration programme.”

VII. BIOGAS PROGRAMME

1.51 Biogas production is a clean low carbon technology for efficient management and conversion of organic wastes into clean renewable biogas and organic fertilizer source. Biogas is generated by anaerobic decomposition of various types of organic materials such as cattle dung and agro/forestry and sanitary wastes in Bio-Gas-Fertilizer Plants (BGFs). Biogas can be used for cooking, heating and lighting, space cooling and refrigeration and in dual-fuel on 100% gas engines for motive power and when attached with alternators for generation of electricity. In addition to generation of biogas, these plants also provide high quality organic fertilizer for sustaining soil-fertility. Based on the availability of cattle dung, a potential of 12 million biogas plants exists in the country which can generate an estimated 17.340 million cubic meter of biogas. During the 11th Plan, the Ministry has envisaged to install 1.4 million cubic meter of biogas generation capacity in the country.

1.52 National Biogas and Manure Mangement Programme (NBMMP) is being implemented in the country since 1981-82 for promotion of biogas plants based on cattle dung and other organic wastes. In addition, the Ministry has started a scheme 'Biogas based Distributed/ Grid Power Generation Programme' (BGPG programme) from 2005-06 with a view to promote biogas based power generation, especially in the small capacity range, based on the availability of large quantity of animal wastes and wastes from forestry, rural based industries (agro/ food processing), kitchen wastes, etc. During the year 2008-09, 'Demonstration of Integrated Technology Package on Biogas Generation Purification and Bottling' was also taken up as a part of R&D and technology demonstration. The NBMMP mainly caters to setting up of family type biogas plants for meeting the cooking energy needs in rural areas of the country.

1.53 A total physical target of 2 mln. cum capacity plants at an outlay of Rs. 250 crore (subsidy component) was proposed in the 11th plan. The achievements and expenditure so far are as under:—

(Rs. in crore)

2007-08		2008-09		2009-10	
Financial RE/Actual	Physical (lakh nos.) Tar/Ach.	Financial RE/Actual	Physical (nos.) Tar/Ach.	Financial BE/Actual	Physical (nos.) Tar/Ach. as on 31.07.09
56/55.90	1/0.89	57/56.99	1.24/1.08	63/23.70	1.50/0.003

1.54 State-wise estimated potential and cumulative achievement for family type biogas plants till 31st March, 2009 and physical target and achievement during 2009-10 (as on 31.12.2009) as furnished by the MNRE, is shown at *Annexure-III*

1.55 The Committee pointed out that biogas programme has huge potential in rural areas but the increasing cost of construction of biogas plants has been the limiting factor for its adoption. When asked as to whether there was any proposal to encourage larger participation of NGOs, Private entrepreneurs and panchayats, the Ministry in a note stated:—

“Under the provisions of the Biogas Programme, State Government Departments and other Implementing Agencies can take up installation of biogas plants through NGOs and private entrepreneurs but these organizations would function within the overall responsibility and coordination of the State Governments/ Agencies. There is also provision for involvement of panchayats for promotional role in the installation of biogas plants.”

VIII. SMALL HYDRO POWER PROGRAMME

1.56 The Ministry of New and Renewable Energy have been vested with the responsibility of developing Small Hydro Power (SHP) projects up to 25 MW station capacity. The estimated potential for power generation in the country from such plants is over 15,000 MW. Most of the potential is stated to be in the Himalayan States as river-based projects and other States on irrigation canals. It has been reported that the SHP Programme is now essentially private investment driven and that projects are normally economically viable and private sector is showing lot of interest in investing in SHP Projects.

1.57 To promote development of SHP Projects, the Government continued to provide fiscal and financial incentives to attract private investment in commercial SHP Projects apart from supporting State Government to set up micro/mini/small hydro projects. The Ministry have also launched a new scheme to provide financial support to SHP projects, both in public and private sector including support for renovation and modernization of old SHP Projects. The Committee have also been informed that higher level of support is provided to the projects in the North Eastern States, Sikkim, Jammu and Kashmir, Himachal Pradesh and Uttarakhand. The Ministry are also providing financial support for the development of water mills and micro hydel projects upto 100 KW. It has also been informed that out of the 5718 potential SHP sites so far identified in the country, about 50% lies in Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir and Uttarakhand. The Ministry are also providing financial support to the States for identification of new potential sites and preparation of a perspective plan for the States for development of small hydro projects.

1.58 The Committee desired to know about the capacity harnessed against the available potential in different States, projects completed and electricity generated in 11th Five Year Plan so far and the Ministry's plan of action for the remaining years of the 11th Plan. The Ministry in a written reply informed:—

“The estimated potential for power generation in the country from small hydro projects (up to 25 MW) is about 15,000 MW. So far, 690 SHP projects of 2520 MW have been set up and 306 projects of about 970 MW are in various stages of implementation. Focused attention is given towards systematically harnessing the potential and addressing State specific constraints and improving policy environment to attract private sector investments. The Ministry is implementing a project on ‘Electrification/illumination of all villages in the border districts of Arunachal Pradesh’.

At present, a capacity addition of about 250 MW per year is being achieved from SHP projects and about 70% is coming through private sector. 23 States have so far announced their policies to invite private sector to set up SHP projects. These states have allotted sites of over 4600 MW to the private sector. So far, 177 private sector SHP projects with an aggregate capacity of 956.48 MW have been set up. In order to accelerate the pace of small hydro development, both public and private sector participation for commercial projects and decentralized micro hydel for remote village electrification are being encouraged. The aim of the SHP programme is to double the current growth rate and take it from 250 MW per year to 500 MW per year. During the 11th Plan, a target of 1400 MW has been fixed against which 534 MW have been achieved."

1.59 The Ministry further added:—

"The Prime Minister during his visit to Arunachal Pradesh on 31st January – 1st February 2008 had announced a package of Rs. 550 crore to provide electricity/illumination through solar power as well as small hydro power projects to all the villages along the state border. Accordingly, a plan was drawn to electrify/illuminate 1483 un-electrified villages of all border districts of Arunachal Pradesh. A project for electrification/illumination of the 1058 villages is being implemented at a total cost of Rs. 275.58 crore. The project will be completed in three years. Already 520 villages have been illuminated by SPV systems and 20 small/ micro hydel projects completed."

1.60 On being asked about the efforts of the Ministry in coordinating with State Governments for implementation of Small Hydro Projects, the Ministry in a note stated:—

"The Ministry is giving focused attention towards monitoring of ongoing projects to expedite implementation and remove bottlenecks, specifically the issue of time taken in giving clearances by various State Government Departments. In this regard, the Ministry is regularly interacting with the States and the private developers. During last one year, Secretary MNRE had series of meetings with the States and visited Himachal Pradesh, Jammu and Kashmir, Chattisgarh, Karnataka and Uttarakhand to review the matter. The Minister (NRE) had a meeting with Chief Minister of Himachal Pradesh on 24th August, 2009, where the issue of giving clearances to SHP projects in a time bound manner was discussed in detail. A meeting was taken by Secretary, MNRE to review the

status of SHP projects implemented by private developers with the State Government officials and SHP developers from Himachal Pradesh, Jammu and Kashmir, Chattisgarh and Uttarakhand on 12th January 2010.”

PART II

OBSERVATIONS/RECOMMENDATIONS OF THE COMMITTEE

In Committee's view the rural electrification should be a very important part of the overall electricity policy of the Government in the context of improving the quality of living and for economic empowerment of the rural populations. In the wake of the ever-increasing energy requirement of the country, renewable energy sources like solar, wind, small hydro and bio power have a vital role to play in supplementing conventional power generation and meeting basic energy needs, especially in the rural and remote areas. The Committee also note that as per the National Electricity Policy, 2005, 56% village households had no access to electricity. Even under the ambitious Rajiv Gandhi Grameen Vidyutikaran Yojana, the Government have been able to achieve only 70 per cent of their target (upto 31st May, 2010) wherein reportedly about 1,14,500 villages have been electrified. Therefore, still in many remote villages where grid connectivity has not been provided on feasibility and viability considerations, the application of new and renewable energy sources/systems assumes paramount importance. In view of the importance of the rural application of new and renewable energy, the Committee selected the subject for detailed examination. The observations/recommendations of the Committee have been set out in succeeding paragraphs.

BUDGETARY ALLOCATION AND TARGETS

2.2 The Committee note that the Ministry of New and Renewable Energy had proposed a plan outlay of Rs. 2,500 crore for its different rural energy systems/programmes for the 11th Five Year Plan. 9,000 villages with an outlay of Rs. 650 crore were to be electrified under Remote Village Electrification (RVE) Programme, 1,000 Villages with an outlay of Rs. 225 crore under Village Energy Security (VES) projects, 10,000 villages (both RVE and VESP) for cooking/motive power (non-electrical RE systems) with an estimate of Rs. 900 crore, 2 mln cum. under biogas plants for cooking applications with an outlay of Rs. 250 crore, 1 million square metre collector area with an estimate of Rs. 150 crore under the scheme Flat Plate Collectors for Hot water, Rs. 250 crore were earmarked under the scheme Decentralized SPV systems/devices without any physical targets. Rs. 50 crore were proposed

for solar cookers/driers and 25 crore for concentrating solar cookers. However, an amount of Rs. 1000 crore was approved as budget outlay for the 11th Plan period without allocating the amount headwise to different programmes. As many as 4 programmes out of 8 were neither allocated any fund nor any targets were fixed with regard to their implementation. As far as the achievement of target (both physical and financial) during the first three years of the 11th Plan is concerned, a lot need to be done as only 2378 villages from out of the target of 5000 could be electrified under RVE till 31st January, 2010 with an expenditure of Rs. 272.50 crore. Similarly, the target under biogas was fixed to 3.78 lakh plants for the first three years of the 11th Plan out of which only 2.54 lakh plants could be completed with an expenditure of 171.51 crore against BE of 162 crore. No target has been fixed under Decentralized SPV system and 1.46 MWp could be achieved by spending Rs. 147.80 crore. The Committee's examination has revealed glaring disparity between the target set and achieved under different programmes being run by the Ministry. The sidelining of four important programmes by not initiating any action regarding their implementation itself speaks about the poor and improper planning and mixing up of the priority areas. Rural electrification and its associated benefits should be the priority consideration of the Government. With a view to facilitate rural electrification expeditiously without being dependent on regular known sources of energy, non-conventional and renewable sources have been identified to meet the situation. Therefore, the Committee recommend that a careful, practicable and implementable strategy ensuring maximum utilization of these sources should be devised to achieve the target within the stipulated budgetary outlays.

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

2.3 The Committee note that the achievement of targets is far from satisfactory in all programmes being run by the Ministry under RVE. Even 50% of the villages earmarked under the target for first three years have not been electrified and budget allocation of about 90% have been eaten up. Under biogas, only 2.54 lakh have been established against the target of 3.78 lakh plants while the expenditure on the same has overshoot of the budgetary estimate. This is nothing but ill conceived planning, poor implementation, lack of coordination and will to implement the programme and achieve the target. Despite this, there has been an increase of 45% in the budgetary allocation of the Ministry for the rural renewable energy programmes during the Mid-Term Appraisal. This itself speaks about the importance being attached to the Rural Electricity Programmes by the Government. However, extreme incoherence prevails in overall expenditure under various programmes being implemented, targets set and achieved under

each of the programmes and direction with regard to efforts for attainment of the targets. With this attitude, it will be practically impossible to do something meaningful within the stipulated timeframe. The Committee, therefore, strongly recommend that while acknowledging the importance of the programme, a meticulous planning fixing inter-se priority of the various programmes should be done to make the programmes economically viable and practically implementable. Budgetary estimates should also be assessed in such a fashion to avoid the unnecessary locking of precious finances. Thereafter, focused efforts should be made to achieve the targets fixed under each of the programme/schemes of this arena to make the life better for the citizens living in countryside.

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

REMOTE VILLAGE ELECTRIFICATION PROGRAMME

2.4 The Committee note that the Remote Village Electrification Programme (REVP) is being implemented by the Government to provide lighting/electricity in those remote unelectrified villages and hamlets which are not going to be covered under Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) by using renewable energy options like small hydro plants, biomass, solar energy, etc. The Committee have been given to understand that the decision to use a particular technology is taken by the state implementing agencies after examining the technical feasibility and resource availability. Under the scheme, the Ministry provide Central Financial Assistance (CFA) upto 90 per cent of the costs of installation of various renewable energy devices/systems. The Committee find that only 1280, 325 and 700 villages and hamlets were electrified in 2007-08, 2008-09 and 2009-10 (upto 31st October, 2009) against the targets of 2000, 1500 and 1500 villages respectively during three years. Also, the amount spent upto 30th September 2009 was only Rs. 27 crore against BE of Rs. 80 crore for the year 2009-10. While acknowledging all the positive intentions and the fruitful contents of the programme, the Committee are not satisfied with the pace of implementation. The poor achievements so far during the current 11th Plan period not only form the basis of the Committee's observation but also raise doubt over the accomplishment of the piled up unattained targets in the remaining period. The main constraints put forward by the Ministry are change in plans by the State Governments for coverage of villages through grid extension, lack of provision of state financial contribution, logistic problems due to extremely remote location of the villages and hamlets, lack of adequate organizational and financial resources with the state implementing agencies and lack of coordination between the implementing agencies of RGGVY and those of RVE. The

Committee feel that the obstacles highlighted by the Ministry are neither unforeseen nor insurmountable and the implementation of the programme cannot be left to suffer on account of these routine administrative and functional bottlenecks. Since RVEP is exclusively an MNRE Programme being funded by their budget, the administrative Ministry is duty bound to ensure that the issues are addressed from all angles and a practical and pragmatic solution is worked out in coordination with all concerned in order to meet the set targets in a time bound manner. The Committee take note of the fact that the Ministry has set up a Coordination Committee under the Chairmanship of Secretary, MNRE with representation from the Ministry of Power, REC, Planning Commission and the Ministry of Panchayati Raj. This Committee will help in formulating plans, provision of budgets, synchronization of MNRE programmes with that of Ministry of Power, but some mechanism is required to put up at local level. The Committee, therefore, recommend that apart from the high level Coordination Committee at Central level, local Committees at State levels or regional levels well versed with the local problems and their solutions should be established to ensure hassle-free implementation of schemes at ground level so that the plans/programmes of the Ministry are converted into the reality and the population living in remote and far off areas improve their living and economic conditions.

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

VILLAGE ENERGY SECURITY TEST PROJECTS (VESP)

2.5 The Committee note that the Village Energy Security Test Projects (VESP) was started during 10th Five Year Plan to meet the total energy requirements of cooking, lighting and motive power of remote villages, through locally available renewable energy resources, particularly biomass, with active community participation. The initial proposal under VES Projects was to cover 1000 villages with a total outlay of Rs. 225 crores during 11th Plan. Subsequently, the target was reduced to 200 Test projects. The Committee are surprised to find that only test projects have been commissioned so far and as on 30th June, 2009 only 17 villages could be covered with financial expenditure of Rs. 6.99 crore under the projects. With such a poor performance so far during the current plan on both physical and financial fronts, the Committee are constrained to point out that the implementation of these projects has been extremely tardy and much below the plan targets. Moreover, the reasons advanced by the Ministry for this state of affairs like the challenges being faced in identification of villages, community mobilization, managing trained personnel and local share of capital cost and in performance monitoring are superficial and not

convincing. It appears that the problems enumerated by the Ministry are meant to cover up their own failure in foreseeing the difficulty in remote areas and coming up with pragmatic remedial measures. The Committee understand the conditions and resource availability vary from area to area particularly in remote villages and feel that the Ministry should have worked out concrete and comprehensive plan of action in advance in coordination with the local Government, implementing agencies and local panchayats area-wise in a proactive manner and should have strived to convert the objective and spirit behind the well thought out scheme of the Government into reality in order to lit the life of the most needy people. That this was not done is nothing but regrettable. The decision to concentrate on consolidating the projects already taken up for implementation and to take up new villages only under the RVE Programme is also a disappointing manifestation of the non-performance of the Government. The Committee, therefore, recommend that the Ministry should critically review their own performance, identify the shortcomings project-wise, work out action plan for rest of the projects accordingly with well coordinated and practical approach, keep strict vigil on the progress so as to accomplish the remaining targets in a time bound manner.

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

SOLAR PHOTOVOLTAIC SYSTEMS

2.6 Solar Photovoltaic (SPV) Technology is used to convert sunlight into electricity. As abundant solar radiation is available in the entire country, the Committee take it as the most useful and futuristic technology and thus reducing our dependence on fossil fuel and encouraging the use of renewable energy. Launching the new solar mission by the Government shows that the Government is not only aware of the importance and usefulness of the SPV technology in India but also has taken the bold and much needed initiative to convert an ambitious target of 20,000 MW grid solar power, 2000 MW off-grid capacity including 20 million solar lighting systems by 2022 into reality. The Committee trust that the Government must have analysed the daunting task ahead in implementation of solar energy projects and accomplishing the ambitious targets and are geared up to work with requisite force, zeal, meticulous planning and tight monitoring. The Committee find that the performance of the Government so far with regard to SPV programmes has not been encouraging both in setting the targets and making efforts in achieving the same. During the 11th Five Year Plan itself, BE/RE was Rs. 52.50/60.75 crore and actual expenditure was Rs. 55.35 crore in 2007-08. While in the year 2008-09, it was Rs. 87.25/67.35 crore and actual expenditure was Rs. 62.45 crore.

The target during the year 2007-08 was 4.21 MWp and 2008-09 4.4 MWp while the achievement was 3.56 MWp and 2.59 MWp respectively for these two years under various SPV Systems. This itself speaks volumes about the performance and planning of the Ministry. Above all, the Committee are surprised to note that the Ministry have not fixed any system-wise physical targets during 2009-10 showing project mode of implementation and have spent a poor sum of Rs. 7 crore during the first quarter of 2009-10 against the BE of Rs. 98 crore for the year. Also the Committee do not find any notable performance in sanctions as well as actual implementation of different solar energy programmes like solar home lighting systems, street lighting systems, solar lanterns and stand alone solar power plants in various States and observe that a lot of work has to be done in many States like in Uttar Pradesh where only 450 street lighting systems have been installed whereas the sanctioned number was as many as 2,361 in 2009-10. Another disquieting feature about this project is that the aggregate SPV capacity under off-grid systems and power plants installed during 2009-10 is reported to be about 3.06 MW while those sanctioned during the year is about 6.50 MWp. Against this backdrop, the Committee recommend that the Ministry fix targets even in project mode and start a special drive to complete the backlogs and also to take up new projects for speedy implementation in time-bound manner with special attention to rural SPV programmes where the people are more needy as compared to their urban counterparts.

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

2.7 The Committee have been informed that the installed SPV systems need expenditure on operation and maintenance mainly on the replacement of batteries after 4-5 years. It has also been stated that the manufacturers/suppliers provide two years warranty and comprehensive maintenance contracts for next three years for the systems under programme. It is understood that the need for actual maintenance of the SPV installations and replacement of batteries arises after 4 to 5 years of installation of the system, which incidentally happens to be the closing period of the maintenance contract. The Committee feel that the beneficiaries, even if they are willing to maintain the system, may find it difficult to get the genuine batteries and other parts and proper service at reasonable rates. Moreover, the statement that 'it is the responsibility of the people of those areas to maintain the facility' appears to be too harsh and rigid especially to the common rural people who are not even aware of the general technical know-how of the SPV installations. The investment made by the Government goes in vain if the installations are not made use of for want of proper and timely maintenance. The Committee, therefore,

recommend that the Ministry, instead of simply bothering about their target achievement statistics, should come forward with some prudent and pragmatic solution so that the efforts and money invested by them serve the purpose and there is optimum utilization of the SPV installations by the beneficiaries. One such solution is to ensure the availability of services of the same company for maintenance who can provide best available quality of batteries and proper service at subsidized rates. Also Cooperation of Panchayats, Self Help Groups and NGO's can be sought for helping in running the systems. The Committee would like to be apprised of the steps taken in this regard.

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

SOLAR THERMAL ENERGY

2.8 The Committee note that solar cooker and solar dryers are one of the important appliances of solar thermal energy in rural areas. The Committee find that small capacity solar dryers are used for drying of food products in rural areas and are being promoted through NGOs, Women Self Help Groups etc. The Committee feel that applications of solar cooker in the rural areas will improve the health condition of the villagers and that of solar dryers will generate employment opportunities ultimately improving the economic activities at village level. The solar cooking should also be promoted in group activities in rural areas like schools for mid-day meals and at anganwaries, etc. The Committee while appreciating the initiatives of the Ministry for providing financial assistance to the manufacturers and users, recommend that the systems should be made available to the rural users at affordable price. Further, the Committee desire that demonstration and promotional programmes of the systems should be increased in the rural areas.

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

BIOGAS PROGRAMME

2.9 The Committee note that under the biogas programme, the Ministry aim at the deployment of family type biogas plants of average 2 cum per day capacity for biogas generation from cattle manure as major feedstock, mainly for cooking application in rural areas. The Committee find that against the vast estimated potential of 1,23,39,300 family type biogas plants, the cumulative achievement as on March, 2009 is 41,33,710 which is merely 33.5 per cent. This implies that a lot of work is yet to be done in this important area of renewable energy for rural application. Further analysis of data reveals that the plants so far

installed in some of the States *viz.* Assam, Bihar, Haryana, Jammu and Kashmir, Madhya Pradesh, Manipur, Meghalaya, Punjab, Rajasthan, Tripura and Uttar Pradesh are comparatively low *vis-à-vis* their available potential for such installations. The Committee are surprised to note that the targets set for many of these States for the year 2009-10 are highly low. For example, targets for Bihar, Jammu and Kashmir, Manipur, Rajasthan and Uttar Pradesh are 300, 100, 50, 50 and 4000 respectively during the year 2009-10. Even the performance during the said year upto first three quarters has been 51,732 plants against the total target of 1,50,000 plants, showing that almost two-third of the target was left for fulfillment in the last quarter, which is just impossible to be achieved by the Ministry. The Committee would like to stress that besides generating electricity, biogas plants also provide high quality organic fertilizer which are essential for sustaining soil fertility. In view of the foregoing, the Committee recommend that the Ministry should reenergize themselves and take initiative to ensure utmost utilization of available opportunities particularly in high potential States so as the usage of family type biogas is encouraged in the rural areas where raw materials are abundantly available. As the cost of construction of biogas plants has been the limiting factor for its adoption, the Committee recommend that efforts should be made to rationalize the cost and promote the larger participation of NGOs, private entrepreneurs and local communities in this area.

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

SMALL HYDRO POWER

2.10 The Committee note that as against the estimated potential of about 15000 MW for Small Hydro Projects, the capacity of the installed project is only about 2500 MW in various States. Besides projects of more than 900 MW are at various stages of implementation. As such a huge Small Hydro potential is still lying untapped in the country. Since most of the potential is in Himalayan States being river-based projects extending upto North-Eastern region, the Committee feel that the Small Hydro Power Programme is the most suited option after Solar Photovoltaic in illuminating remote villages. The Committee are happy to note that the Ministry are encouraging both public and private participation for commercial projects and decentralized micro hydel projects for remote village electrification. The Ministry have taken a step further in granting due importance to this programme by stating that the aim of the SHP programme is to double the current growth rate and take it from 250 MW per year to 500 MW per year. At the same time, the Committee are not satisfied with the actual performance of the Ministry at the ground level achieving only 534 MW during first

three years of 11th Five Year Plan against the overall target of 1400 MW. The Ministry have no other option but to accelerate the pace of implementation by evolving proper coordination mechanism with the State Governments to overcome the bottlenecks. The Committee also find that the target for the 11th Plan under SHP has been reduced to 1000 MW during Mid-Term Appraisal without reducing the financial allocation of Rs. 700 crore. Moreover, the Prime Minister has approved a special package of Rs. 550 crore to provide electricity/illumination to all the villages along the state border of Arunachal Pradesh through solar as well as small hydro power projects. Considering the available funds for installation of Small Hydro Projects, the Committee expect the Ministry to show the required will power and zeal to intensify the momentum of implementation of the pending projects by taking necessary initiative and steps to undertake new projects as well. At the same time, the Committee recommend that small hydel power projects should be given top priority by the Government to ensure that the identified potential of 15,000 MW for small hydro projects in the country could be tapped by the 12th Plan period. The Committee also recommend that identification and evaluation of new potential sites should also be undertaken in order to take the most needed benefit to the deprived masses in remotest rural areas of the country.

(Para No. 2.10, Recommendation Sl. No. 9)

NEW DELHI;
18 August, 2010

27 Shravana, 1932 (Saka)

MULAYAM SINGH YADAV,
Chairman,
Standing Committee on Energy.

ANNEXURE I

(Vide Para No. 1.11 of the Report)

11TH PLAN – PROPOSED TARGETS/OUTLAY, APPROVED OUTLAY
AND REVISED PROJECTIONS FOR RURAL ENERGY SYSTEM

(Rs. in crore)

Programme	11th Plan Proposed Targets/Outlay		11th Plan Approved Outlay (40%)	Revised Projections for 11th Plan	
	Physical targets	Proposed outlay		Physical	Financial
FT Biogas Plants for cooking applications	2 mln. cum	250		1.4 mln.	450
Remote Village Electrification (RVE)	9,000 villages	650		10,000 villages	600
VES Projects	1,000 villages	225		0	0
Common component for cooking/motive power (Non-electrical RE systems)	All 10,000 villages under RVE and VESP	900		0	0
Flat plate collectors for hot water	1.0 mln. M2 collector area	150		0	0
Solar Cookers/ Dryers	0.5 mln. M2 Collector area	50		0	0
Concentrating Solar Cookers	0.1 mln. M2 collector area	25		0	
Decentralized SPV systems/devices	—	250*		20 MW	400
	Total	2,500	1,000		1,450

*Reflected in 11th Plan proposals under I&PE – Extension of SPV and other RE systems. Also includes deployment of SPV systems in Urban Areas.

(Vide Para No. 1.12 of the Report)

Programme-wise details of physical targets/achievements and financial outlays/expenditure during the 11th Five Year Plan [during 2007-08, 2008-09 and 2009-10 (upto 31.10.2009)] including the programmes for rural areas

Sl. No.	Programme	Allocation (CFA)/Actual Expenditure (Rs. in crore)	2007-08		Allocation (CFA)/ Expenditure (Rs. in crore)	2008-09		Allocation (CFA)/ Expenditure (Rs. in crore)	2009-10	
			Target	Ach.		Target	Ach.		Target	Ach. (31.10.09)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
GRID INTERACTIVE AND OFF-GRID/DISTRIBUTED POWER (Capacities in MW)										
1.	Wind Power	110.00/87.92	1500.00	1663.50	150.00/116.20	2000.00	1485.50	220.00/114.24	2500.00	649.00
2.	Small Hydro		200.00	204.75		250.00	248.93		300.00	90.11
3.	Bio Power		275.00	81.00		300.00	97.50		405.00	113.50
4.	Bagasse Cogeneration			185.00			247.90			192.00
5.	Waste to Power—Urban		2.00	-		5.00	-			8.41
	— Indstl.		10.00	11.72		8.00	3.66		15.00	
6.	Solar Power		-	-		14.00	-		4.00	1.10
Total						2577.00	2083.49		3224.00	1054.12

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
OFF-GRID/DISTRIBUTED POWER (MWeq.)										
7.	Waste to Power—Urban —Indstl.		3.00 5.00	3.00 4.00		5.00 7.00			10.00	
8.	Non-bag. Cogen.		20.00	49.20		30.00	75.77		50.00	10.60
9.	Gasifiers —Rural —Indstl.		1.00 10.00	1.02 11.62		1.00 10.00	1.03 13.20		3.00 10.00	0.06 2.85
10.	Aero-Gens/Hybrid systems		0.15	0.11		0.30	0.11		0.30	-
11.	SPV Plants + Street Lights		-	0.33		-	1.00		5.00	-
12.	Water Mills (WMs)/ Micro/mini-hydel plants		-	0.37 (144 nos. WMs)		-	0.70 (339 nos. WMs)		17.50	1.75 (19 nos. WMs)
	Total		39.15	69.65		53.30	99.17		95.80	19.17
DECENTRALISED RENEWABLE ENERGY SYSTEMS										
13.	Remote Village Electrification (Nos. of Villages+ Hamlets)	280.00/211.51	2000	1992 Sanctio- ned/1280 comple- ted	186.00/167.54	1500	636 Sanctio- ned/325 comple- ted	230.00/84.05 (up to 31.10.09)	1500	270 sanctio- ned/700 comple- ted
14.	Family type Biogas Plants (No. in lakh)		1.00	0.89		1.24	1.08		1.50	0.16

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
15.	SPV Home Light Systems (Nos.)		63,250	57,382		*	65,904		*	2,815
16.	SPV Street Lights (Nos.)		7,000	3,120		16,769	7,391		*	-
17.	SPV Lanterns (Nos.)		94,000	46958		*	56,397		*	58,064
18.	SPV Pumps (Nos.)		100	42		*	56		*	-
19.	Solar Water Heating-collector area (Million sq. meter)		0.60	0.45		0.60	0.56		0.60	0.22
20.	Solar Cookers (Nos.)		20,000	20,165		20,000	20,590		20,000	NA
21.	Wind Pumps (Nos.)		140	80		100	NA		Nil	-

MW = Megawatt; kW = kilowatt, kWp = kilowatt peak; sq.m. = square meter; NA: Report Not Available.

* Practice of assigning targets discontinued. CFA sanctioned based on specific proposals to be submitted in project mode.

ANNEXURE III

(Vide para No. 1.54 of the Report)

State-wise estimated potential and cumulative achievement for family type biogas plants till 31st March, 2009 and physical target and achievement during 2009-10 (as on 31.12.09)

States/Union Territories	Estimated potential (Plants in No.)	Cumulative Physical achievements as on 31/03/2009 (Plants in No.)	Target and Achievements during 2009-10 (Plants in Nos.)	
			Target	Achievement (upto 31.12.2009)
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	1065000	444239	16500	8260
Arunachal Pradesh	7500	2795	200	23
Assam	307000	71142	10000	3045
Bihar	733000	125688	300	-
Goa	8000	3862	50	16
Gujarat	554000	401394	10000	3579
Haryana	300000	52661	1500	684
Himachal Pradesh	125000	45471	150	17
Jammu and Kashmir	128000	2334	100	18
Karnataka	680000	408436	20000	2805
Kerala	150000	122378	6000	1824
Madhya Pradesh	1491000	280466	16000	7083
Maharashtra	897000	769292	8000	4118*
Manipur	38000	2128	50	-
Meghalaya	24000	5836	400	222
Mizoram	5000	3770	100	-
Nagaland	6700	3548	350	195
Orissa	605000	234522	5000	871
Punjab	411000	98039	10000	3666
Rajasthan	915000	67172	50	-

(1)	(2)	(3)	(4)	(5)
Sikkim	7300	6778	200	148
Tamil Nadu	615000	214776	1500	257
Tripura	28000	2746	100	25
Uttar Pradesh	1938000	419017	4000	499
West Bengal	695000	301762	15000	3998*
A&N Islands	2200	137	-	-
Chandigarh	1400	97	0	-
Dadra and Nagar Haveli	2000	169	0	-
Delhi	12900	679	-	-
Puducherry	4300	573	5	-
Chhattisgarh	400000	28617	5000	1959*
Jharkhand	100000	3903	500	505
Uttarakhand	83000	9283	900	307
KVIC and others	-	-	18000	7608
Total	12339300	4133710	150000	51732

*Figures are being firmed up

ANNEXURE IV

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

The Committee sat on Wednesday, the 27th January, 2010 from 1130 hrs to 1330 hrs in Committee Room '62', Parliament House, New Delhi.

PRESENT

Shri Mulayam Singh Yadav — *Chairman*

MEMBERS

Lok Sabha

2. Shri Paban Singh Ghatowar
3. Shri Arjun Munda
4. Shri Shripad Yesso Naik
5. Shri Sanjay Nirupam
6. Shri Jagdambika Pal
7. Shri Nityananda Pradhan
8. Shri M.B. Rajesh
9. Dr. K.S. Rao
10. Shri Ganesh Singh
11. Shri Vijay Inder Singla
12. Shri Subhash Bapurao Wankhade

Rajya Sabha

13. Shri Santosh Bagrodia
14. Shri Rama Chandra Khuntia
15. Shri Bhagat Singh Koshyari
16. Shri Shyamal Chakraborty
17. Shri Govindrao Wamanrao Adik
18. Shri Mohammad Shafi

SECRETARIAT

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

LIST OF WITNESSES

MINISTRY OF NEW AND RENEWABLE ENERGY

1. Shri Deepak Gupta — Secretary
2. Ms. Gauri Singh — Joint Secretary
3. Shri D. Majumdar — CMD, IREDA
4. Dr. B. Bandopadhyay — Scientist 'G'
5. Dr. N.P. Singh — Scientist 'G'
6. Shri Sudhir Mohan — Scientist 'G'
7. Dr. B.M.S. Bist — Scientist 'G'
8. Dr. A.R. Shukla — Scientist 'G'
9. Dr. S. Gomathinayagam — Scientist 'G'

2. At the outset, the Chairman, welcomed the members of the Committee and the representatives of the Ministry of New and Renewable Energy to the sitting of the Committee and mentioned that the sitting has been convened to hear the views of the Ministry on the subject "Renewable Energy for Rural Applications".

3. Thereafter, the representatives of the Ministry of New and Renewable Energy made a brief power-point presentation on Remote Village Electrification and Biogas Programmes in rural areas.

4. The Committee discussed with the representatives of the Ministry on the following important points relating to the subject:—

- (i) Remote Village Electrification Programme.
- (ii) Biogas/Biomass Programme.
- (iii) Solar Energy Programme.
- (iv) Coordination between the Government/State Governments and various other Agencies in implementing the Programmes.
- (v) Maintenance arrangement of installed projects.

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

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

The Committee then adjourned.

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

The Committee sat on Tuesday, the 10th August, 2010 from 1500 hrs. to 1530 hrs. in Committee Room 'G-074' Parliament Library Building, New Delhi.

PRESENT

Dr. K.S. Rao—*In the Chair*

MEMBERS

Lok Sabha

2. Shri Adhir Ranjan Chowdhury
3. Shri Ram Sundar Das
4. Shri Sanjay Nirupam
5. Shri Jagdambika Pal
6. Shri Ravindra Kumar Pandey
7. Shri M.B. Rajesh
8. Shri Vijay Inder Singla
9. Shri Subhash Bapurao Wankhade

Rajya Sabha

10. Shri Motilal Vora
11. Shri Bhagat Singh Koshyari
12. Shri Govindrao Adik
13. Shri Mohammad Shafi
14. Prof. Anil Kumar Sahani

SECRETARIAT

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

2. In the absence of the Chairman, the Committee chose Dr. K.S. Rao, 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. At the outset, the Chairman welcomed the Members of the Committee. The Committee then took up for consideration the draft Reports on

- (i) 'Availability of Gas and Coal for Power Sector'; and
- (ii) 'Renewable Energy for Rural Applications'.

4. The Committee adopted the aforementioned draft Reports with slight changes.

5. The Committee then authorized the Chairman to finalise the Report taking into consideration the 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.