

STANDING COMMITTEE ON ENERGY

(2002)

TWENTY EIGHTH REPORT

THIRTEENTH LOK SABHA

MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES

DEMANDS FOR GRANTS (2002-2003)

Presented to Lok Sabha on 23.4.2002

Laid in Rajya Sabha on 24.4.2002

LOK SABHA SECRETARIAT

NEW DELHI

April, 2002/Chaitra, 1924 (Saka)

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COMPOSITION OF THE STANDING COMMITTEE
ON ENERGY LOK SABHA (2002)

Shri Sontosh Mohan Dev- Chairman

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5. Shri Vijayendra Pal Singh Badnore
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- 17** Shri Subodh Mohite
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25. Shri Raghuraj Singh Shakya
26. Shri Manoj Sinha
27. Shri Chandra Pratap Singh
28. Shri Tilakdhari Prasad Singh
29. Shri B. Venkateswarlu
30. Prof.. Ummareddy Venkateswarlu

* Nominated to the Committee w.e.f. 5th March,2002

** Nominated to the Committee w.e.f. 17th January, 2002

RAJYA SABHA

31. Shri Santosh Bagrodia
- 32*. Shri Brahmakumar Bhatt
33. Shri Dara Singh Chauhan
34. Shri Manohar Kant Dhyani
- 35**. Shri B.S.Gnanadesikan
36. Shri Aimaduddin Ahmad Khan (Durru)

- 37***. Shri B.J.Panda
38 Shri Kripal Parmar
39.@ Shri Mahendra Prasad
40. Shri V.V.Raghavan
41. Shri Rumandla Ramachandraiah
42.@@ Shri Mirza Abdul Rashid
43. Shri Kushok Thiksey
44. Shri D.P.Yadav
45. Vacant

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| 3. | Shri R.S.Kambo | Under Secretary |
| 4. | Shri N.K.Jha | Sr. Committee Assistant |

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- * Ceased to be Member of the Committee w.e.f 9th April, 2002 consequent upon his retirement from Rajya Sabha
- ** Ceased to be Member of the Committee w.e.f 2nd April, 2002 consequent upon his nomination to the Standing Committee on Defence.
- *** Nominated to the Committee w.e.f. 7th February,2002
- @ Ceased to be Member of the Committee w.e.f. 4th January,2002 consequent upon his nomination to the Standing Committee on External Affairs.
- @@ Nominated to the Committee w.e.f. 21st January, 2002

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorized by the Committee to present the Report on their behalf, present this Twenty Eighth Report (Thirteenth Lok Sabha) on Demands for Grants (2002-2003) relating to the Ministry of Non-Conventional Energy Sources.

2. The Committee took evidence of the representatives of the Ministry of Non-Conventional Energy Sources on 21st March, 2002.

3. The Committee wish to thank the representatives of the Ministry of Non-Conventional Energy Sources who appeared before the Committee and placed their considered views. They also wish to thank the Ministry for furnishing the replies on the points raised by the Committee.

4. The Report was considered and adopted by the Committee at their sitting held on 10th April, 2002.

5. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in bold letters in the body of the Report.

NEW DELHI;
10 April, 2002
20 Chaitra, 1924 (Saka)

SONTOSH MOHAN DEV,
Chairman,
Standing Committee on Energy.

Introductory

Energy security has come to be viewed as a factor of immense strategic importance in ensuring all-round economic development of a nation. The reasons are not far to see. Energy is a basic input for almost all the economic activities. In fact one of the indicators of economic growth has all along been the per capita consumption of energy. Fossil fuels such as coal and petroleum, and biofuels like wood, have been the energy sources of the world for centuries. However, as the 20th century drew to a close, ushering in the third millennium, there has been a growing recognition, for more than one reasons, of the dangers inherent in continuing with the model of economic development based on excessive consumption of fossil fuels. Of late, world opinion has been a growing in favour of looking for alternatives to fossil fuels that would ensure eco-friendly and sustainable development on the one hand and energy security on the other. There was a surge of interest, commitment and funding for developing and disseminating renewable energy technologies and strategies in the aftermath of the first oil crisis during the seventies. Subsequently, this interest declined due to the fall in oil prices during the nineties. However, local and regional environmental concerns such as air pollution, water pollution, land degradation, waste generation and global environmental concerns such as the growth in atmospheric concentration of the Green House Gases (GHGs) leading to climate change have again brought renewable energy to the centre stage. The broad goals of the Government of India under “Energy for All” concept assumes an increasing role for renewables, particularly for meeting the energy needs of rural areas and for environmental conservation. Under the influence of programmes of the UN Framework Convention on Climate Change (FCCC) and the Kyoto Protocol and the need for promoting sustainable development, renewable energy technology development and transfer and large scale funding are projected for the future.

1.2 India is a large country with a population of around one billion in the year 2000. Its population is expected to grow at a rate of about 1.6 per cent annually and GDP growth rate is estimated to grow at over 6 per cent over the next 10 years, requiring an energy growth rate of 9 per cent. Consumption of coal and petroleum fuels is projected to nearly double by 2010. India is also projected to become an imported petroleum fuel dependent economy. Conditions are thus compelling for India to attempt to meet its growing energy needs in a self-reliant manner, through renewable energy.

1.3 Recognising the relevance of renewable energy sources, the Government of India set up in 1981 a Commission for Additional Sources of Energy (CASE), on the lines of the Space Commission and the Atomic Energy Commission in the Department of Science and Technology. A year later, a separate Department of Non-Conventional Energy Sources was created in the Ministry of Energy. Ten years later, this was upgraded to the level of an independent Ministry. India has thus earned the distinction of possibly being the only country in the world to have an exclusive Ministry for Non-Conventional Energy Sources (MNES) which has been implementing one of the world’s largest programmes on renewable energy, like biogas, small hydro projects, wind, geothermal energy, solar photovoltaics, etc. spanning the entire spectrum of technologies targeted towards all sections of the society. The two-fold objectives of the Ministry are (i) to increase the role of renewables in the energy sector and (ii) to reduce and mitigate the pollution caused by conventional fossil fuels. To subserve these objectives the Ministry functions as a catalyst, bringing into fruition the project proposals in the renewable energy sector through a range of policies and programmes.

1.4 Following are the functions assigned to MNES:-

- Research and development of biogas and programmes relating to biogas units;
- Commission for Additional Sources of Energy (CASE);
- Solar energy including Solar Photovoltaic (SPV) devices and their development, production and applications;
- All matters relating to small / mini / micro hydel projects of, and below, 25 MW capacity;
- Programme relating to improved chulhas and research and development thereof;
- Indian Renewable Energy Development Agency;
- Research and development of other non-conventional / renewable sources of energy and programmes relating thereto;
- Tidal energy;
- Integrated Rural Energy Programme (IREP);
- Geothermal energy.

1.5 The power generation from renewable sources has been increasing but there is still a long way to go to achieve the full potential of 1,00,000 MW from the renewable sources. The estimated potential and the extent of exploitation so far is given below:-

NRSE POTENTIAL & ACHIEVEMENT		
	Potential	Achievement as on 31.12.2001
Biogas Plants	120 lakh	32.75 lakh
Improved Chulhas	1,200 lakh	338 lakh
Wind	45,000 MW	1,507 MW
Small Hydro	15,000 MW	1,423 MW
Biomass Power / Co-generation	19,500 MW	358 MW
Biomass Gasifiers		42.8 MW
Solar PV	20 MW / sq. km	82 MW
Waste-to-Energy	1,700 MW	17.1 MW
Solar Water Heating	1,400 lakh sq.m Collector Area	6 lakh sq.m Collector Area

1.6 A draft renewable energy policy statement has been drawn up outlining the policy and programme interventions required to achieve the goals of meeting the minimum rural energy needs, providing decentralized off-grid energy supply for certain applications and generating grid quality power based on renewables. The draft also sets the medium term goals for achievement by 2012. This includes electrification of 18,000 remote villages and

achieving a minimum share of 10% or 10,000 MW from renewable energy in the power generation capacity to be added by 2012 A.D.

1.7 As a part of special initiative to develop the North-Eastern Region, the Ministry has earmarked 10% of its domestic budgetary support for the North-Eastern States, including Sikkim, in its major programmes. It has also approved a scheme for providing Central financial assistance to set up and strengthen the State Nodal Agencies to develop energy from non-conventional sources.

1.8 Since renewable energy can be produced in a decentralized manner, it can help to overcome the problems of distribution associated with conventional sources of energy, especially in remote rural areas. The significance of this is to be seen in the light of the fact that as many as 80,000 villages in the country are un-electricified and 18,000 of these villages are considered economically non-viable for grid connected power. Moreover, de-electricified villages which had lost their faith in conventional grid power could find a ray of hope through non-conventional grid quality power. It has been proposed to electrify all of these 18,000 villages through locally available renewable energy options like solar photovoltaics (SPV), small hydro and biomass within the next two Plan periods i.e. by the year 2012. During the year 2001-2002, it was proposed to initiate pilot schemes for electrification of such villages under the Village Electrification Programme and a sum of Rs.20.00 crore was earmarked for the purpose. 500 unelectrified villages are proposed to be electrified through Non-Conventional Energy Sources under the Village of Electrification Programme during the year 2002-03 and Rs. 61.50 crore have been earmarked for the same.

1.9 The detailed Demands for Grants of the Ministry of Non-Conventional Energy Sources were laid on the Table of Lok Sabha on 14.3.2002 'Demand No.61 of the Ministry under which provision has been made for Plan and Non-Plan expenditure, consists of two parts', viz. Revenue Section and Capital Section for the year 2002-2003. It contains the following figures:-

(Rs. in crore)

	Plan	Non-Plan	Total
Revenue Section	494.20	5.27	499.47
Capital Section	130.05	-	130.05
Total	624.25	5.27	629.52

1.10 A detailed statement showing the actual Revenue and Capital expenditure for the year 2000-2001, Budget Estimates, Revised Estimates for 2001-2002 and Budget Estimates for 2002-2003 are given at Appendix I.

1.11 The observations of the Committee on the basis of the scrutiny of Demands for Grants for the years 2002-03 are brought out in the succeeding chapter.

CHAPTER-II

A. Budgetary Allocation

The details of Central Plan Outlay indicating Budget Estimates, Revised Estimates and Actual expenditure incurred during the years i.e. 1998-1999, 1999-2000, 2000-2001 and 2001-02 are as below:-

Item	1998-1999			1999-2000			2000-2001			2001-2002		
	BE	RE	Act.	BE	RE	Act.	BE	RE	Act.	BE	RE	Act.
Domestic budgetary support (DBS)	254.50	219.08	215.87	300	266.24	264.64	353.66	265.02	252.34	339.25	342.92	-
Gross Budgetary Support (GBS)	403.02	299.80	293.61	355	314.50	312.87	442.16	353.52	340.84	583.00	494.16	-
IEBR	327.16	294.12	267.79	411.11	500.42	436.77	505.24	505.24	429.28	456.71	362.37	-
Total Outlay	730.18	593.92	561.40	766.11	814.92	749.64	947.40	858.76	770.12	1039.71	856.53	-

2.2 When asked about the reasons for variations between BE, RE and Actuals during the last three years, the Ministry in a written note stated:-

“The main reason for variation between BE, RE and actual utilization is the cut imposed by the Ministry of Finance at RE stage during the last three years. However, the plan funds provided at RE stage were almost fully utilized during the last three years. The marginal saving during 2000-01 was mainly on account of the fact that the proposal for re-appropriation of grant within the Minor Heads of “Lump Sum Provision for NE including Sikkim” from BE and RE 2000-01 was not approved by the Ministry of Finance at the fag end of the Financial Year, which led to a savings of Rs.10.01 crore under this Head, even though proposals had already been approved by the Ministry for releases of funds to be made to this extent. Plan Expenditure is expected to be fully utilized during 2001-02 as per the BE level, except a saving under the Mathania Project which could not be taken up during the year”.

2.3 Explaining the reasons for reduction in Central Plan Outlay between BE and RE during the year 2001-2002, the Ministry stated:-

“The reduction in Central Plan Outlay between BE and RE during the year 2001-02 is mainly on account of non-utilization of funds of Rs.112.00 crore meant for undertaking 140 MW Integrated Solar Combined Cycle (ISCC) power project at Mathania, Jodhpur, Rajasthan. The 140 MW Integrated Solar Combined Cycle (ISCC) project was approved as a Centrally-assisted project, to be implemented by Rajasthan State Power Corporation Limited (RSPCL), at an estimated cost of Rs.872 crore. The means of finance for the project include a grant of US \$ 45 million from Global Environment Facility (GEF) and a grant of Rs. 50 crore from the Ministry of Non-Conventional Energy Sources. The contract for the project was to be awarded by RSPCL during 2001-02. The State Government had accordingly requested the Ministry to keep necessary provisions during 2001-02 for releases to be made against the GEF and MNES grants. Provision of Rs.92 crore against release of GEF grant of US \$ 20 million was accordingly kept during 2001-02, alongwith a provision of Rs.20 crore against the MNES grant. However, on account of the sudden increase in price of naphtha, which was to be used for the conventional component of the power plant, a search for alternative fuel has been undertaken thus delaying implementation of the project by RSPCL. Moreover, the Request for Qualification (RfQ); Request for Proposals (RfP) and Power Purchase Agreement (PPA) with Rajasthan Vidyut Prasaran Nigam have also to be finalized. As the contract could not be awarded by RSPCL, provisions kept by the Ministry for the current year had to be surrendered. RSPCL have proposed change of fuel to Regasified-Liquified Natural Gas (R-LNG). This is being further investigated. They have now proposed to award the contract by October, 2002”.

2.4 The reasons for hike in Central Plan Outlay for the year 2002-2003 are given below:-

- The Ministry has formulated the Annual Plan 2002-03 based on the broad guidelines set for 10th Plan period to be commensurate with the goal of 10% share of renewables **i.e.** 10,000 MW in the power generating capacity to be added by the end of 2012.
- The physical target of 4227.5 MW power generating power capacity from renewables has been set for the 10th Five Year plan. Accordingly, a total 548 MW of generating capacity from renewables during 2002-03 has been proposed.
- The Ministry has been assigned to undertake electrification of 18,000 remote unelectrified villages by 2012 through Non Conventional Energy Sources. Accordingly, 500 unelectrified villages are proposed to be electrified through non-conventional energy sources during 2002-03.
- Similarly, the targets proposed for decentralized energy systems have been increased keeping in view the overall target pertaining to 10th Plan.
- In order to achieve the physical targets stated above during 2002-03, a higher allocation of Central Plan Outlay has been proposed”.

Mobilisation of Resources

2.5 The details of Internal and Extra Budgetary Resources (IEBR) – BE , RE and Actuals for the last couple of years in respect of IREDA are given below:-

[Rs. In Crores]

	1998-99			1999-2000			2000-01			2001-02		
	BE	RE	Actual	BE	RE	Actual	BE	RE	Actual	BE	RE	Likely Actual
IEBR												
1. External Aid Received Direct	39.50	0.00	3.22	72.70	131.33	102.00	157.53	157.53	162.22	173.30	145.00	136.46
2. Other IEBR	287.66	294.12	264.57	338.41	369.08	334.77	347.71	347.71	317.64	364.12	302.09	451.22
SUB-TOTAL....A	327.16	294.12	267.79	411.11	500.41	436.77	505.24	505.24	479.86	537.42	447.09	587.68
Less:												
Repayment of :												
a) IDA-MNES Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.58	30.71	30.71	30.71
b) Tax Free Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	50.00	50.00	50.00
C) ADB/BoB-INR Loan	0.00	0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.01	4.01
SUB-TOTAL....B	0.00	0000	0.00	0.00	0.00	0.00	0.00	0.00	50.58	80.71	84.72	84.72
GRAND TOTAL (A-B)	327.16	294.12	267.79	411.11	500.41	436.77	505.24	505.24	429.28	456.71	362.37	502.96

2.6 On being enquired about the reasons for variations between the projected IEBR and Actuals, the Ministry in a written note stated:-

1998-99

- During 1998-99 the variations between BE/RE and Actuals was largely on account of non-utilization of ADB Loan against the BE of Rs. 39.50 crore.
- Further Bank Loans, which were pegged at Rs. 75 crore was not availed at RE stage.
- The tax-free bonds projected at Rs.100 crore in BE came down to Rs. 50 crore in RE because that was the amount allocated by Ministry of Finance. However, because of persistent effort, Ministry of Finance increased the allocation to Rs. 90 crore only at the end of financial year.

1999-2000

- Increase in ADB loan on account of reassessment of disbursement target under ADB line of credit and due to expected utilization of GEF Grant;
- Increase in “Other IEBR” is mainly on account of higher projection for Carry Forward Surplus and Repayment of Loans.

2000-01

- There is no variation between BE and RE in respect of IEBR.

2001-02

- The variation between BE & RE are due to decrease in ADB loan on account of reassessment of disbursement target under ADB line of credit; reassessment of disbursement target under KfW line of credit; reassessment of disbursement target under IBRD line of credit and Internal Accruals on account of Interest Income and NPA provision of potential NPA borrowers.
- Reduction in Carry-forward Surplus on account of higher disbursement in the financial year 2000-01.
- Increase in repayment of loan on account in intensive follow up with borrowers and increase in Bank loan to meet the shortfall in Tax Free Bonds allocation and also on account of requirement of additional disbursement estimated during the year.
- Repayment of ADB/BoB-INR to ADB was not estimated at BE stage since the last date to draw the ADB loan was 15th July 2002.

2.7 When asked whether the Ministry of Finance had imposed any cut on the Plan/ Non Plan programmes of the MNES during the last two years i.e. 2000-2001 and 2001-2002, the Ministry in a written note stated:-

“The Ministry of Finance has imposed a cut on plan expenditure during 2000-01. The budget has been reduced during 2001-02 mainly on account of non-utilization of funds of Rs.112 crore meant for undertaking Mathania Project”.

2.8 The quantum of cuts imposed by the Ministry during the 9th Five Year Plan is as under:-

(Rs. in crore)					
Item	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
<u>DBS</u>					
BE	259.00	254.50	300.00	353.66	339.25
RE	129.87	219.08	266.02	265.02	342.92
Quantum of cut	129.13	35.42	33.76	88.64	(+) 3.67
<u>GBS</u>					
BE	339.13	403.02	355.00	442.16	583.00
RE	190.00	299.80	314.50	353.52	494.67
Quantum of cut	149.13	103.22	40.50	88.64	88.33
<u>IEBR</u>					
BE	293.54	327.16	411.11	505.24	456.71
RE	273.88	294.12	500.42	505.24	362.37
Quantum of cut	19.66	33.04	(+)89.31	0.00	94.34
<u>Outlay</u>					
BE	632.87	730.18	766.11	947.40	1039.71
RE	463.88	593.92	814.92	858.76	856.53
Quantum of cut	168.99	136.26	(+)48.81	88.64	183.18

2.9 When asked about the extent of the physical and financial targets achieved during 9th Five Year Plan, the Ministry stated:-

“**a. Financial:** The Planning Commission fixed a total outlay of Rs.3800.14 crore for 9th Plan period comprising of Rs.1822.14 crore as Domestic Budgetary Support, Rs.300.00 crore as Externally Aided Projects and Rs.1678 crores as IEBR. The details of 9th Plan allocation year-wise, Budget Estimate, Revised Estimate and Expenditure incurred during 1997-98 to 2001-02, is given at Annexure-I. The consolidated BE, RE and likely utilization of funds during the 9th Plan (sector-wise) are stated below:-

Consolidated BE, RE & Likely Utilization during 9th Plan Period.

(Rs. in crore)

Sectors	9th Plan Allocations	Approved Budget Estimates 1997-02	Approved Revised Estimates 1997-02	Total Likely Expenditure 1997-02	% Exp. vis-à-vis 9th Plan Allocations	% Exp. vis-à-vis Budget Estimates	% Exp. vis-à-vis Revised Estimates
RURAL ENERGY PROGRAMMES	464.14	486.14	410.91	438.95	94.57	90.29	106.82
SOLAR ENERGY PROGRAMMES	356.50	314.92	243.37	241.37	67.71	76.65	99.18
POWER GENERATION PROGRAMMES	626.00	394.82	293.80	299.48	47.84	75.85	101.93
New Technology	25.00	30.75	22.14	20.14	80.55	65.49	90.96
OTHER PROGRAMMES	100.50	94.28	72.74	90.53	90.08	96.03	124.46
IREDA Equity	250.00	184.50	176.50	160.00	64.00	86.72	90.65
TOTAL (DBS)	1822.14	1505.41	1219.46	1250.49	68.63	83.07	102.54
Externally Aided Projects : Total	300.00	615.90	521.36	504.22	168.07	81.87	96.71
TOTAL (GBS)	2122.14	2121.31	1740.82	1754.71	82.69	82.72	100.80
IEBR	1678.00	1993.76	2030.37	2021.43	120.47	101.39	99.56
Total Outlay	3800.14	4115.07	3771.19	3776.14	99.37	91.76	100.13

From the above details it is expected that entire funds allocated (RE) would be utilized by the end of 9th Plan period. Therefore, as such there is no shortfall in utilization of funds allocated during 9th Plan period.

b. Physical Achievement : The details of programme-wise physical targets approved by the Planning Commission and annual target fixed and achievement made under various programmes during 9th period is given at **Annexure-III**. A target of 1527 MW power generation from Wind, SHP, Biomass and waste to energy was fixed at the beginning of the 9th Five Year Plan period. However, on the basis of actual fund allocations made as a year-to-year basis, the physical targets for the 9th Plan actually comes to about 1242 MW. Against this an aggregate capacity of about 1200 MW power projects has so far been installed in the country during the period. The shortfall in achieving the targets set for power generation is mainly on account of lower allocation of funds, economic recession, frequent changes in renewable energy power policies announced by States, non-availability of matching funds from the State Governments needed for implementation of these projects, etc. The targets set for 9th Plan could not be fully achieved under stand alone systems / devices mainly because matching funds commensurate with targets have not been provided by the State Governments. However, the targets set annually based on funds actually allocated under biogas, improved chulhas, solar photovoltaic lighting systems, solar thermal energy programme, solar pumps, biomass gasifier, wind pumps and small aerogenerators have been fully achieved”.

Position of Renewable Sources of Energy

2.10 In spite of development of Non-Conventional Energy Sources, in various fields, it has still not attracted enough public interest. Explaining the reasons for lower dependence on Renewable Sources of Energy in India, the Ministry stated:-

“Even though the dependence on renewable sources of energy is low in the overall energy scenario of the country, their development and utilisation has been gradually increasing, particularly over the last two Plan periods, both for decentralized applications and for power generation. A capacity of nearly 3400 MW of grid quality power has already been installed, which constitutes almost 3.4% of the total installed capacity in the country. This compares favourably with many of the advanced countries of the world as well. The dependence on these sources is expected to increase further with greater awareness, higher product maturity, greater reliability, effective maintenance and repair services, easier availability of finance, and conducive policies for promotion of renewable energy. The dependence on these sources could increase even more if the full cost of conventional power is taken into account, and the costs to environment and other externalities, as also direct and indirect subsidies are also accounted for. The higher initial cost at present of renewable energy systems would thus get neutralised. Furthermore, the running cost of renewable energy systems is lower as fuel cost is zero for solar energy, small hydro and wind power projects compared to the escalating cost of fossil fuel required for conventional power projects. Renewable energy projects are also environmentally benign.

The other reasons for lower dependence on Renewable Sources of Energy in India include:-

- Higher initial costs.
- Higher operational costs/maintenance costs.
- The low perceived reliability of renewable energy products.
- Lack of ‘market’ environment in renewable energy sector, **i.e.**, inadequate showrooms, inadequate after sales services, etc. in the private sector.
- Intermittent nature of availability of products.
- Lack of level playing ground.
- Failure to stabilize technology”

2.11 When asked about the most significant achievements in commercializing these technologies during the past couple of years, the Ministry in a written note stated:-

“The most significant achievements in commercialising these technologies during the past couple of years include:-

- MNES has succeeded in establishing a cumulative wind power capacity in India of 1507 MW out of which 1444 MW has come through commercial projects in the private sector. India is the fifth highest wind energy producer in the world.
- In the area of biomass power / bagasse cogeneration, a capacity of 86 MW was initiated / created against a target of 25 MW for the 8th Plan. The total installed capacity at present stands at 358 MW, and a further capacity of 389 MW is under implementation. The total capacity is expected to reach 380 MW by the end of March, 2002. Bulk of this capacity also has come through private investments.
- Small Hydro Projects with an installed capacity of 217 MW have been set up in the country of which 30 MW are in the private sector. Almost 2000 MW of SHP sites have been offered by various States to the private sector.
- Setting up of 'Aditya' Solar Shops on commercial lines, which organize a variety of renewable energy products from a single outlet.
- Commercial marketing (without subsidy) of solar water heating systems and solar cookers and providing them with financial institution support.
- Substantial manufacturing capacity in the country in all sectors of renewable energy has been created.
- Fall in prices of SPV products.
- Solar water heating systems have achieved a high level of quality and are readily available from many manufacturers with BIS certification".

2.12 When asked whether the MNES had proposed any reduction / concessions in Excise and changes in the Taxation proposals in the current budget for promoting Non-Conventional Energy Sources, the Ministry in a note stated:-

“The Ministry made some recommendations for the FY 2002-03 budget to the Ministry of Finance concerning modifications in the existing customs and excise duty rates on certain items relating to the non-conventional energy sector. The recommendations of the Ministry for removal of CVD on (i) import of raw materials required for manufacture of blades of wind electric generators; and (ii) exemption of basic duty on import of certain capital equipment required for manufacture and testing of solar cells and modules have been accepted. The Ministry also recommended continuation of existing duty structure on various non-conventional energy related items, which has also been accepted by the Ministry of Finance. A proposal relating to reduction in customs duty on import of certain components used in PV systems to a level of 15% has not been accepted. The Ministry also recommended 5% duty on import of : (i) tempered glass for manufacture of solar thermal collectors; (ii) thin aluminium sheet for use in solar cookers; and (iii) specified components of battery operated vehicles. These recommendations have also not been accepted by the Ministry of Finance. However, the customs duty on these items has also been reduced to a maximum of 30% as part of the general reduction in duties. Another proposal for duty free import of biogas engine sets of capacity 1 MW and above, which can operate exclusively with biogas, when used in waste to energy conversion projects has not

been accepted. With regard to direct taxes, the Ministry had recommended continuation of 100% accelerated depreciation benefit for non-conventional energy related items. This appears to be under review. Another recommendation concerning removal of MAT has not been accepted. Continuation of 100% accelerated depreciation benefit for the renewable energy sector was proposed as this has played a significant role in commercial development of non-conventional energy sources. In the Budget, reduction of 100% accelerated depreciation rate has been proposed. Comments and suggestions have been invited on the proposed rate of 60%, at which depreciation on renewable energy devices and systems is to be made admissible from Assessment Year 2003-04. Reduction in the depreciation rate could hamper commercial development of this sector. It is expected that removal of CVD on raw materials for manufacture of blades of wind electric generators and exemption of customs duty on certain capital equipment required for manufacture of solar photovoltaic cells / modules would help the domestic industry. Continuation of existing concessions to the non-conventional energy sector would also help growth in this sector”.

- 2.13 The Committee find that a large component of the Central Plan outlay of the MNES is derived from the Internal and Extra Budgetary Resources (IEBR). The realization of IEBR ranged from 44 to 59 per cent since 1998-1999. The Committee are at a loss to understand the under-utilisation of the IEBR component over the years. Further, there has always been a great variation between the budgeted Estimates, Revised Estimates and the Actuals. The Committee have noted that during the year 2001-2002, the variation is attributed to decrease in ADB loan, reassessment of disbursement target under KfW / IBRD line of credit , etc. The Committee also find that the Government could not raise projected finances through Tax Free Bonds as only Rs.50.00 crore could be realized as against the target of Rs.100.00 crore. In the opinion of the Committee, a wide variation between projected IEBR and actual realization is an indicator of poor budgetary management. The Committee, therefore, desire that MNES should project a realistic and achievable IEBR, so that the plans and programmes of the Ministry do not go haywire. The Committee would like to be apprised of the action taken by the Government thereon. The realisation of IEBR should be uniformly spread over the year so that there is no occasion for the Ministry of Finance to impose any cut at RE stage.**
- 2.14 The Committee have taken note of a substantial cut in the Budgetary allocation of MNES by Ministry of Finance during each financial year of the 9th Five Year Plan. During 1997-1998, as against an allocation of Rs.632.87 crore, the quantum of cut was Rs.168.99 crore. Similar cuts were noticed during the remaining years of the 9th Five Year Plan. Despite progressive utilization of the budgetary resources by the Ministry of Non-Conventional Energy Sources, the Ministry of Finance have resorted to such cuts and as a result, there has been under-utilisation of allocated amounts. The Ministry of Finance, on the other hand, have averred that due to poor working of various programmes and policies of the Ministry, they had to take such drastic steps. Planning Commission have, however, opined that they had not been consulted in regard to imposition of cut by Ministry of Finance. In the opinion of the Committee, this imbroglio have resulted in under-utilisation of the allocated budget and hence under-achievement of targets. The Committee, therefore, recommend that different Ministries of the Government should ensure better coordination among themselves, so that such an impasse could be avoided. The Committee hope and trust that different arms of the Government would**

take due care and caution and act in unison, so that only achievable targets for the 10th Plan are planned for the different sectors.

2.15. The Committee have reviewed the performance of different programmes of MNES during the 9th Plan period. They have found that some of the programmes have witnessed an excellent growth, taking into consideration, the targets fixed and cumulative achievements. For instance, programmes like Biogas Plants, Community / Institutional / Night Soil Based / Biogas Programme, IREP, SPV, Solar Lanterns, Solar Water Heating System, Biomass / SPV power, etc, witnessed more than 80% achievement. However, programme like Waste to Energy could achieve only 41% of their assigned targets. The Committee recommend that while formulating 10th Five Year Plan proposed, the Government should ensure that achievable targets are fixed. The Committee also desire that the Government should focus their attention towards the schemes / programmes, which could not achieve their assigned targets. The Committee would like to be apprised of the action taken in this regard.

2.16. The Committee are happy to learn that the Ministry have succeeded in establishing a total capacity of 358 MW through biomass / bagasse based power generation, 1507 MW capacity through wind power and 217 MW through small hydro projects. Bulk of these capacities has come through private investments. A capacity of nearly 3400 MW grid quality power has already been installed. This constitutes 3.4% of the total installed power generation capacity in the country. However, the penetration of renewables is far less when compared to the existing potential, despite several innovative policies and measures taken to promote them. In the opinion of the Committee there are some bottlenecks, which have come in the way of promotion and development of renewable energy sources. These include – higher initial operational and maintenance costs, lower reliability, lack of level playing field, failure to recognize the key-barriers with respect to each of the renewable energy technologies and lack of need-based Research and Development (R&D) work for the removal of the key-barriers. The Committee recommend that the Ministry should take corrective measures which, inter-alia, include re-orientation of R&D efforts, dissemination strategy and policies to encourage commercialisation and private sector and community participation, development of appropriate strategies to attract private sector and international funding and creation of awareness on various aspects of renewables. The Committee would like to be apprised of the action taken by the Government in this regard.

2.17. The Committee note that the Ministry have made a resolve to achieve the target of additional installed capacity of 10 per cent i.e. 10,000 MW by the year 2012. In addition, it has also been decided to electrify all the 18,000 un-electrified villages through various Non-Conventional Energy Sources which cannot be electrified through conventional grid power. The Committee are happy to note that the Government have acceded to the long standing request of MNES for removal of Counter-Vailing Duty on import of raw materials required for manufacture of blades of Wind Electric Generators (WEGs) and exemption of basic duty on import of certain capital equipment required for manufacture of Solar Photovoltaic Cells / Modules. The Committee view that these concessions would undoubtedly go a long way in giving the much needed impetus to the development of the non-conventional sector. The Committee feel that there are other sectors in MNES, which also require such a favourable dispensation. The Committee, therefore, urge that for sustaining the growth of non-conventional energy sector, reduction in customs duty on import of components used in PV system be brought down to 15%, Import Duties on the Biogas engine-sets of capacity 1 MW and above used in waste-to-

energy conversion project be removed. 5% duty on Import on (i) tempered glass used in solar thermal collectors and (ii) thin aluminum sheet used in solar cookers should be levied. Moreover, the existing 100% accelerated depreciation benefit should be allowed to continue. The Committee hope and trust that taking into consideration the long-term perspective in view, the Government would accede to their desire.

B. Biomass Conversion and Utilisation Programme

Of all the renewable energy sources, Biomass is the largest, most diverse and most readily exploitable resource for energy. Biomass can be converted into gaseous form through the gasification route. Biomass Gasifiers convert solid biomass (woody and powdery) materials such as wood, agricultural and agro-industrial wastes, etc. into producer gas through thermo chemical gasification process. The producer gas could either be burnt directly for thermal applications, or be used replacing diesel oil in dual fuel engines for mechanical and electrical applications.. Fuel-based Biomass Gasifier systems upto 500 KW capacity have been developed indigenously and are being manufactured in the country. Indigenously developed technology for biomass gasifiers, though readily available from a few manufacturer is still in the demonstration stage in various parts of India. In the process, India has emerged a world leader in the development and deployment of gasifier technology and systems. MNES is promoting gasifiers for electrical as well as thermal applications, though the focus is on the former. The potential for biomass power is more than 17,000 MW. Thermal gasifiers are technically reliable and economically attractive compared to conventional alternatives for vegetable and tea drying, brick and ceramic kilns, silk industry, etc.

2.19. During 9th Five Year Plan, a physical target of 40 MW with financial outlay of Rs.25.00 crore was earmarked for Biomass Gasifier Programme. The physical and financial targets and achievements during 9th Five Year Plan, year-wise are given below:-

Year	Financial (Rs. in crore)		Physical (in MW)		
	Targets		Targets	Achievements	
	BE	RE			
1997-1998	4.00	1.50	1.65	6.0	5.7
1998-1999	2.50	1.50	2.10	2.5	3.1
1999-2000	3.00	3.00	3.36	2.0	4.0
2000-2001	5.20	4.00	4.53	7.0	5.8
2001-2002	6.00	6.40	6.40 (likely)	7.0	2.6 (as on 28.02.2002)

2.20. Under the programme, 1756 gasifier systems with an aggregate capacity of 42.82 MW (equivalent) have been installed in various States. During the year 2001-2002 as many as 21 project proposals aggregating to 2.60 MW (equivalent) capacity have been sanctioned as on 31st December, 2001 to Gujarat, Kerala, Uttar Pradesh and Nagaland. Against a target of 7.0 MW (equivalent) gasifier systems set for the year 2001-2002, 12 systems with an aggregate capacity of 2.635 MW (equivalent) have already been commissioned as on 28.2.2002. The restructured and modified scheme of the 1999-2000 programme, which was slightly modified during 2000-2001, was continued during the year 2001-2002. Under this scheme, additional features have been incorporated to promote and encourage the development of viable application packages, deployment of gasifier systems for different end-use applications, higher capacity utilization, improved product quality, effective deployment and higher performance level.

2.21. A physical target of 16 MW is proposed for the National Biomass Gasifier Programme for the year 2002-2003 with a total capital outlay of Rs.5 crore.

State-wise number and capacity of Biomass Gasifiers installed during 2001-2002 (as on 31.12.2001) is as under:-

Gasifier Systems Commissioned			
Sl.No.	State	Number	Capacity (in KW)
1.	Andhra Pradesh	1	100
2.	Gujarat	6	1570
3.	Tamil Nadu	1	300
4.	West Bengal	4	665
	Total	12	2635

2.22. The average cost per MW of Biomass Gasifier based power plants is in the range of Rs.2.50 crore to Rs.3.50 crore, depending upon the locations, and mode of application.

2.23. As regards the policies for private sector's participation in the Biomass Conversion and Utilisation Programme, the Ministry gave the following information in a written reply:-

“In accordance with the Guidelines of the Ministry, policies for grid interconnection and buy-back of power have been announced in several potential States as mentioned in the Annexure – III. The Ministry continuously interacts with the State Governments and State Electricity Boards in regard to announcement of uniform policies as per the Ministry's guidelines. Meetings are held and communications sent at various levels for declaration of conducive policies by the States to attract private sector investments for these projects”.

2.24. In regard to the private sector's participation in the production of Biomass Gasifier equipments, the Ministry in their written reply informed as under:-

“The private sector is already participating in the production of Biomass Gasifier equipments. The subsidy and other promotional incentives provided by the Government are also encouraging deployment of Biomass Gasifiers, mainly for thermal applications in industry. Private promoters and developers have also been showing keen interest in undertaking larger Biomass Gasifier based projects for captive power or grid-connected power generation as commercial gasifier units of 500 KW units capacity have been developed, and are now available commercially”.

2.25. The promotion of biomass based power generation in the country is being encouraged through favourable policy regimes at the State and Central levels. A package of fiscal incentives such concessions in customs duties, exemption from excise duty and central sales tax, tax holidays, accelerated depreciation, etc. is also available for commercial projects which are given below:-

Fiscal Incentives for Biomass Power Generation

Item	Description
Accelerated Depreciation	100% depreciation in the first year can be claimed for the following power generation equipment: <ol style="list-style-type: none"> 1. Fluidized Bed Boilers 2. Back pressure, pass-out, controlled extraction, extraction and condensing turbine for power generation with boilers 3. High efficiency boilers 4. Waste heat recovery equipment
Income Tax Holiday	Five Year Tax holiday with 30% exemption in the next 5 years
Customs Duty	Duty leviable for NRSE power projects of less than 50 MW capacity (under project import category) is 20% advalorem. This covers machinery and equipment component parts required for generation of electric power.
Central Excise Duty	Exempted for renewable energy devices, including raw materials, components and assemblies
Central Sales Tax	Exempted for renewable energy devices, including raw materials, components and assembles
General Sales Tax	Exemption is available in certain States

2.26. Regarding the role of domestic financial institutions for the promotion and development of National Biomass Gasifiers Programme, the Ministry informed in a written reply as under:-

“Biomass Gasifiers are mainly being installed in unit capacity upto 200 KW through the State Agencies, or for thermal applications by industry. The cost of the projects is met through subsidy provided by the Ministry, with balance costs being met by the State Agencies or industry / beneficiaries. As the total cost of these projects is not very high, domestic financial institutions generally do not approach to finance them. However, when Biomass Gasifier projects of 500 KW, or larger capacities, are planned, the promoters of such projects generally approach financial institutions, such as IREDA, or commercial banks, for term loans.”

2.27. Information pertaining to Budgetary Allocation for R&D showing Budget Estimates, Revised Estimates and Actuals for the promotion and development of Biomass conversion and utilization programme during the 9th Five Year Plan is as under:-

(Rs. in crore)

Year	Budget Estimate	Revised Estimate	Actual Expenditure
1997-1998	0.90	0.50	0.53
1998-1999	1.00	0.75	0.75
1999-2000	1.00	1.00	1.36

2000-2001	1.40	1.61	1.61
2001-2002	1.40	1.80	1.40 (as on 28.02.2002)

2.28. No physical targets are set for R&D projects. However, close monitoring of progress is done with a view to bringing about completion of the projects within the approval duration.

2.29. When asked about the thrust areas that have been identified for R&D by the Ministry of Non-Conventional Energy Sources (MNES) in the field of Biomass Gasifiers, the Ministry in a written note informed as under:-

“At present, Biomass Gasifiers are coupled to dual fuel engines. In view of the increasing diesel prices, R&D thrust is being given to the development of 100% producer gas engines to off-set the use of diesel fuel. While wood-based Biomass Gasifiers have been commercialized, thrust is being given to further development of Biomass Gasifiers that operate on crop / agro-industrial residues, powdery biomass, etc. with a view to improving performance and reduce costs. Test procedures, protocols and facilities have also been developed for testing and certification of different models of Biomass Gasifiers being produced by the manufacturers. R&D efforts are also directed towards development of application packages and system integration for various end-user industries. Efforts are continuing towards production of cleaner gas, and removal of ash and tar and particulate matter”.

2.30. Some of the major barriers to large-scale spread of Biomass Gasifiers are (a) inadequate field demonstration and performance guarantee, (b) lack of institutions to undertake planning, implementation, operation and management and; (c) uncertainty about the biomass supply. In this context, following steps as informed by the Ministry, were taken to remove these barriers:-

“The steps proposed to be taken to overcome the barriers include technology and product improvements and system integration for better reliability and higher output, as well as strengthening of demonstration and field trial activities for different applications. Another initiative is to strengthen technology transfer and testing and certification activities for the manufactured products, alongwith furnishing of proper O&M manuals and performance guarantees by the manufacturers . The role of scientific and technical institutions, consultants, NGOs and private developers is proposed to be strengthened to undertake and build capacities for planning, implementation, operation and management of Biomass Gasifier projects, including involvement and training of local communities. Biomass resource assessment studies have been undertaken at Taluka, District and State levels and a Biomass Resources Atlas for India is being prepared to help in precise assessments of biomass availability. Measures are proposed to be taken to improve biomass collection, storage and transportation to overcome future uncertainties about biomass supply”.

2.31. The density of the feed and moisture content of feed are crucial parameters for satisfactory performance of the gasifier. In this context, the Ministry stated:-

“To overcome the problems related to quality and nature of wood and non-woody biomass i.e. feed material for gasifier system, a provision of subsidy for feed handling system, pre-processing of biomass / fuel preparation equipment for large

capacity systems, including briquetting equipment, has been kept under the National programme”.

2.32. When asked about arrangements for the availability of raw materials used in the Biomass Gasifiers for the generation of power, the Ministry replied as under:-

“A Detailed Project Report is required to be prepared for all projects of 100 KW capacity and above. Details about availability of adequate biomass for the plant, to be run on an year-round basis, are furnished in the Project Reports. Biomass Gasifiers are mainly utilize woody biomass, which can be obtained from forestry residues and energy plantations. Biomass Gasifiers also utilize crop residues, such as various kinds of straws and stalks, or agro-industrial residues, such as various husks, shells, etc. Adequate availability of the requisite biomass is assessed at the time of sanction of Biomass Gasifier projects. Measures are also proposed for improvement of biomass collection storage and transportation methods to ensure adequate availability of raw materials”.

ROLE OF BIOMASS CONVERSION AND UTILISATION PROGRAMME IN ELECTRIFYING UN-ELECTRIFIED VILLAGES

2.33. In India, even though over 80 per cent of villages are electrified, electricity supply and its use is characterized by low loads, high transmission and distribution costs and losses, severe shortages, low reliability, fluctuating voltage and high costs of access. Only a third of the households are truly electrified. Given these features, decentralised electricity options are suggested for rural electrification. Among the many decentralized electricity generation options, sustainable biomass-based electrification is shown to have many advantages:-

- suitable for most locations in India
- lower costs than other renewables
- feasibility of round-the-clock electricity supply
- reclamation of degraded lands
- large rural employment generation
- can be managed by local communities and entrepreneurs with some technical assistance.

2.34. When asked whether Ministry of Non-Conventional Energy Sources have assessed the Biomass potential available in all the 18,000 unelectrified villages situated in remote and inaccessible areas and if any perspective plan of action has been drawn to provide energy through biomass gasification to these villages, the Ministry of Non-Conventional Energy Sources furnished the following details:-

“2,000 villages out of the 18,000 remote villages are proposed to be electrified through biomass gasifier systems by the end of 11th Plan period. 750 villages have been proposed for electrification during the 10th Plan and 1250 villages during the 11th Plan. The identification and assessment of available renewable energy

resources in the 18,000 remote villages has been initiated by the Ministry. The Action Plan, to be prepared for implementation of biomass gasifier projects in the identified villages, would depend upon availability of biomass resources, technical feasibility, availability of funds and putting into place of appropriate implementation and management structures”.

2.35. When the Committee enquired whether such projects have been installed in the Lakshadweep and Andaman & Nicobar islands, the Ministry in a note stated as under:-

“Biomass gasifier projects of 500 KW capacity each have already been undertaken in two islands in Sunderbans, namely, Gosaba and Chotamollakhali islands, in the Bay of Bengal. Another 375 KW projects has recently been approved Patharpratima block in Sunderbans for village electrification. Total potential of 5 MW for biomass based power plants has been assessed by the State Nodal Agency for Sunderbans. Two study teams had visited Andaman & Nicobar islands last year to assess the potential of Non-Conventional Energy projects including the feasibility of undertaking biomass gasifier projects in the islands. Two biomass gasifier projects were implemented earlier in a saw mill and a school in the islands. A 250 KW biomass gasifier project is being implemented at Kavaratti in Lakshadweep islands. It is an experimental project based on coconut residues, being implemented in association with Indian Institute of Science, Bangalore. Action plans for Andaman & Nicobar islands and Lakshadweep can be prepared only after a detailed assessment is undertaken by the respective Union Territory Administrations of the available biomass resources on the islands”.

2.36. In regard to the impediments / bottlenecks noticed in the implementation of the projects, and the steps taken to remove them, MNES stated as under :-

“The main bottlenecks in the way of biomass gasifier projects on the Islands are their remoteness, inaccessibility, and lack of infrastructure, facilities and skilled manpower for implementation, operation and maintenance of biomass gasifier projects. A detailed and scientific assessment of the available biomass resources is also yet to be undertaken. A major biomass resource is coconut residues, for which the technologies are still at the developmental stage. Interaction is being held with the concerned agencies of these Islands with a view to resolving such problems and overcome the impediments”.

2.37. There has been an inordinate delay in commissioning of Biomass gasifier in Lakshadweep. Furnishing reasons, the Ministry of Non-Conventional Energy Sources stated as under:-

“It has been reported by the UT Administration that the supplier has considerably delayed supply of the full equipment for the project. About half the gasifier elements, including the reactor and a few other elements, have been put together on the site. The remaining items including cooling and cleaning systems are yet to be dispatched. The UT Administration and Indian Institute of Science, Bangalore are in touch to resolve the problems and have the project commissioned expeditiously. If the contractual arrangements with the supplier are sorted out soon, the project is likely to be commissioned in about two months”.

2.38. When asked, whether WBREDA had urged the Ministry of Non-Conventional Energy Sources to extend the subsidy at par with the North-Eastern Region, the Ministry in a written note furnished:-

“The proposal for providing higher rate of subsidy for Sunderbans at par with North-Eastern Region is under consideration in the Ministry”.

2.39. Lack of demand for decentralised electricity, as grid electricity is highly subsidized or free is also one of the problems associated with the programme. When asked how would the Ministry of Non-Conventional Energy Sources motivate the entrepreneurs to install and maintain the biomass gasifiers system, the Ministry in their written reply stated:-

“Central Financial Assistance, as well as other fiscal and promotional incentives, are provided to motivate entrepreneurs to set up biomass gasifier systems, mainly for thermal applications or captive power in industry. A large number of such systems have been installed. Village electrification for decentralized electricity generation in remote areas is mainly undertaken through the State Agencies for which capital subsidy is provided. Entrepreneurs are likely to find village electrification projects unattractive, in the near future, as the revenue generation from these projects in remote areas, in general is not likely to be remunerative”.

2.40. A 500 KW gasifier has been installed in Gosaba island off the Sunderbans, West Bengal, for electrification of 5 villages comprising a population of more than 10,000. Furnishing details about the salient features of the Gosaba Biomass Power Plant installed in 1997, the Ministry informed as under:-

Capacity of the Power Plant	5x1000 KW (500 KW)
Location of the Plant	Gosaba island, Sunderbans
Total Population of Gosaba island	About 32,000 people
Distance from Calcutta	115 km.
Distance from the grid line	59 km.
Expenditure	Rs.104.00 lakh
No. of Consumers	Total : 600 out of which Domestic : 400 Commercial : 190 Industrial/ Small : 10
Tariff Structure	Rs.3.50 / unit for domestic Rs.3.75 / unit for commercial Rs.4.00 / unit for industrial load
Length of Distribution Line	11 KV line – 4 Km. Lt Line-7 Km
Hours of Operation / Day	6 Hrs.
Consumption of Diesel	0.10 Ltrs. Per unit at 80% laod
Consumption of Biomass	9000 GMS. Per unit if dried
Operational Manpower	10 Nos.
Monthly Expenditure	Rs.52,000
Monthly Revenue	Rs.60,000
Area Under Plantation	About 100 H.A.
Expected Yield	About 10 Mt / HA / Year
Population Benefited by the Plant	10,000
Indirect Employment	84

2.41. Similarly, a 500 KW biomass gasifier based project comprising four 125 KW biomass gasifiers, was sanctioned to WBREDA, West Bengal for electrification of Chotamollakhali island, at a total cost of Rs.147 lakh, with Ministry of Non-Conventional Energy Sources contributing Rs.63 lakh. The project was commissioned on 29.06.2001.

The plant is providing electricity for domestic, commercial and industrial uses, drinking water, hospital, ice factory, etc. Four villages on the island are being served by this power plant.

2.42. The Power plant at Chotamollakhali (West Bengal) is being operated by a Rural Energy Committee comprising of the local people. This Cooperative Society is responsible for operation, maintenance and management of the power plant, including sanction of connections; fixation of tariff; and collection of revenue. Local youth have been trained in the operation and maintenance of the power plant.

2.43. The one 20 KW based power generation system has been in operation since 1992 in Hosahalli and another of the same capacity from 1998 in Hanumanthanagara both in Karnataka. There has been a consistent demand for replicating the biomass-based decentralized power generation system from neighbouring villages. A plan is being initiated to expand the bioenergy based system to a cluster of 25 villages in 2 neighbouring panchayats in Tumkur district with the main goal of meeting all the rural energy needs from bioenergy technologies.

2.44. **The Committee note that 1356 gasifier systems with an aggregate capacity of 42.82 MW (equivalent) have been installed in the various States. During the year-2001-2002, as many as 21 projects aggregating to 2.60 MW capacity have been sanctioned. The Committee find that despite a package of favourable fiscal incentives like 100 per cent accelerated depreciation for some power generation equipments, Five Year Tax Holiday with 30 per cent exemption in the next five years, Customs Duty, Central Excise Duty, Central Sales Tax and General Sales Tax exemption, the programme has not picked up. Unfortunately, only four States have declared their policies so far in regard to private sector participation in the Biomass Conversion and Utilisation Programme. The Committee find that the policies announced by the State Governments are at variance with the MNES guidelines especially as it does not allow third party sale. The Committee desire that the Ministry give a fresh look at the programme and its implementation. The Committee have noted that some key-barriers which need immediate redressal, include inadequate field demonstration and performance guarantee, lack of institutions to undertake planning, implementation and operation and management and uncertainty about the biomass supply. The Committee desire that the Ministry should take effective and concrete remedial measures to overcome all the above barriers and the Committee be informed of the action taken in this regard. The Committee note that no physical targets have been set for R&D projects in this field. But there is an urgent need to give utmost attention to R&D for development of 100% producer gas engines to offset the use of diesel fuel and Biomass Gasifiers that operates on crop / agro-industrial residuals to improve performance and reduce costs. The Committee desire that a time bound action plan be drawn up to start R&D projects in the above fields.**

2.44.a The Committee have noted that Biomass potential in the States, especially Kerala has not been harnessed fully. The Committee desire that Government should draw an Action Plan to exploit the Biomass potential in Kerala and other States. The Committee do not concur with the views of Government that since the technology for the Biomass Utilisation has been standardized and the programme attained commercialization, there is no necessity of any subsidy. The Committee desire that Government should extend capital and interest subsidy for Biomass project as it has not picked up so far to the desired extent.

2.45. Biomass has been one of the important sources of fulfilling rural energy requirement since time immemorial. Amongst the various decentralised electricity generation operations, sustainable biomass based electrification is the most suitable option and less costly than any other renewables. The Committee are happy to learn that 2000 villages out of 18,000 unelectrified villages are proposed to be electrified through biomass gasifier systems by the end of 11th Five Year Plan period. A total potential of 5 MW for biomass based power have been assessed by the State Nodal Agency (SNA) for Sunderbans in West Bengal. A 250 KW biomass gasifier project is also being implemented in Lakshadweep. Though two study teams have visited the Andaman & Nicobar Islands, the Committee are unhappy to learn that no action plan has been drawn up. The Committee desire that the Ministry should come out with a comprehensive plan for all the 2000 villages to be electrified through biomass gasifiers system.

2.46. The Committee have found that the Government have not shown the required enthusiasm in motivating the entrepreneurs to install and maintain the biomass gasifiers system. The Committee are not convinced with the arguments put-forth by the Ministry that the entrepreneurs are likely to find the village electrification projects unattractive and un-remunerative in the near future. The examples of Gosaba Islands and Chotamollakhali Islands in West Bengal which are run by Committee or cooperative society comprising the local people are an eye opener. They are working smoothly and are running in profit. The monthly expenditure and monthly revenue earning of Gosaba Island system (500 KW), situated in Sunderbans Islands (West Bengal) providing electricity to 10,000 people, are Rs.52,000 and Rs.60,000 respectively, thereby running at a net profit of Rs.8,000 per month. The experience of Hosahalli and Hanumanthanagara in Karnataka and Gosaba in West Bengal shows the feasibility of village electrification programmes based on KW scale biomass gasifiers-based decentralized power generation systems in India.

C. National Project on Biogas Development (NPBD)

The National Project on Biogas Development (NPBD) programme was started in 1981 with a total estimated potential of about 120 lakhs which has now become 130 lakhs and has continued during the 9th Plan period also. Upto March, 1999, 28.63 lakh biogas plants were set up and 32 lakhs had been set up by the end of March, 2001. Thereby, the average rate of harnessing the Biogas potential stands about 1.18 lakh per annum. Furthermore, against a target of setting of 1.80 lakh Biogas plants during the year 2001-2002 only 47,000 Biogas plants which is only about 26.11 per cent of the target set for the year could be harnessed during April to November, 2001. At this rate, it would take many years more to harness the full potential.

2.48. When asked about the reasons for slow rate of harnessing the potential, the Ministry mentioned the following reasons:-

- (i) Relatively high cost of installation of biogas plants as compared to affordability of majority of left over potential beneficiaries, who are mostly small and marginal farmers;
- (ii) Low priority given by many State Governments in providing State subsidy as is being presently given by the Government of Karnataka;
- (iii) Limited Central budgetary support and;
- (iv) Inadequate maintenance servicing at the village and block levels.

The following measures have been taken to improve the achievements:-

- (i) Developing and promoting a cheaper model and a better construction methodology; for example - in-situ ferro cement Deenbandhu model.
- (ii) Improving gas production during winter months by recycling of a part of effluent slurry and providing external heating arrangements in large capacity plants suitable for institutions.
- (iii) Persuading State Governments to emulate the example of the Government of Karnataka which provides State subsidy ranging from Rs.700/- to Rs.5,800/- per plant, depending upon the capacity of plant and category of beneficiary.
- (iv) Involving trained self-employed turnkey workers, entrepreneurs and non-governmental organizations in providing maintenance servicing at the local level.
- (v) Promoting “whole village area approach” since 2000-2001 to demonstrate the impact of biogas plants in terms of reducing health hazards among women folk and improved agricultural production.
- (vi) Raising awareness among women members of gram panchayats through one-day orientation programmes at block levels.
- (vii) Dovetailing the biogas programme with the scheme on organic farming to be launched by the Ministry of Agriculture in the Tenth Five Year Plan”.

2.49 When asked whether any long term perspective plan has been drawn by the Ministry to harness the total estimated potential in a time-bound manner, the Ministry replied as under:-

“A long term plan formulated in the year 2000 envisaged setting up of 30 lakh more biogas plants by 2012 A.D. It included a target of 15 lakh plants for 10th and 11th Five Year Plan each”.

2.50. Commenting upon the time proposed to be taken to accomplish the total estimated potential of NPBD in the country, the Ministry replied:-

“Assuming an average rate of installation of biogas plants to reach 3 lakh plants per year, it would take 20 more years to harness about 80 per cent of the estimated potential”.

2.51. During 8th Five Year Plan, physical target were exceeded. Against the physical target of 8.35 lakh, 9.54 lakh plants were achieved with an expenditure of Rs.310.50 crore. Now after the mid-term appraisal of 9th Five year Plan a sum of Rs.286.00 crore has been earmarked for 10 lakh biogas plants. When asked to specify the reasons for lower achievement of physical targets during 9th Five Year Plan as compared to the 8th Five Year Plan, the Ministry stated that the reasons were (i) allocation of lower than Plan outlay; (ii) small increase in the average Central financial outgo per plant due to increased establishment costs of State Governments and agencies; and (iii) slippages in the implementation taken place in Orissa State under the aegis of KVIC and in Haryana State under AIWC.

2.52. Year-wise physical and financial targets alongwith the reasons for variations in the achievements during 9th Five Year Plan as furnished by the Ministry are as under:

Year	Physical (No. of plants in lakh)		Financial (Rupees in crore)		
	Target	Achievement	BE	RE	Expenditure
1997-1998	1.75	1.75	57.65	28.75	54.82
1998-1999	1.33	1.50	54.24	54.24	54.63
1999-2000	1.68	1.68	59.50	59.50	59.50
2000-2001	1.80	1.71	61.70	58.30	56.97
2001-2002	1.80	1.80 (anticipated)	59.50	57.00	57.00 (anticipate)

“Every year, the physical targets were achieved, except in the year 2000-2001 when implementation by KVIC in Orissa State was suspended due to poor performance in previous years and the State Government of Andhra Pradesh started large scale promotion of Liquified Petroleum Gas (LPG) as cooking fuel in rural areas. The target for the 9th Five Year Plan were fixed originally as 12 lakh plants with a Plan outlay of Rs.260.00 crore. It was revised to 10 lakh biogas plants with a Plan outlay of Rs.286.00 crore at the stage of Mid-Term appraisal., However, the Ministry had informed to the Planning Commission at that time itself that an additional budget of Rs.65.50 crore would be needed for matching the allocated Plan target. As required higher budget was not allocated and slippages in the implementation by KVIC in Orissa State and by AIWC in Haryana State were observed and release of funds to them was stopped, the utilization of budget in 2000-2001 and 2001-2002 remained lower than the BE allocation”

2.53. The physical target sets and corresponding achievement made during 9th Five year Plan for each of the North-Eastern States including Sikkim alongwith the reasons for variations as furnished by the Ministry are as under:-

I. Physical :

(No. of plants)

State	1997-98		1998-99		1999-2000		2000-2001		2001-2002	
	T	A	T	A	T	A	T	A	T	A (Apr.01- Feb-02)
Arunachal Pradesh	100	105	100	30	250	201	300	139	400	-
Assam	1500	275	500	223	500	67	750	147	250	2
Manipur	300	271	200	190	600	112	600	146	250	17
Meghalaya	100	Nil	100	75	300	75	300	80	200	100
Mizoram	200	147	200	200	400	300	400	400	500	398
Nagaland	300	121	200	104	800	73	800	315	500	165
Sikkim	250	174	200	200	600	181	600	202	250	234
Tripura	100	72	100	92	180	205	250	215	300	126
KVIC for NE States	*	5405	*	6617	5500	6080	6000	6657	2150	1748

II. Financial

(Rupees in lakh)

State	1997-98	1998-99	1999-2000	2000-2001	2001-2002
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	T	A	T	A	T	A	T	A	T	A (Apr.01- Feb-02)
Arunachal Pradesh	6.00	6.70	7.00	10.00	10.00	5.20	20.00	7.50	50.00	-
Assam	90.00	27.15	35.00	14.79	20.00	13.25	20.70	-	31.25	-
Manipur	18.00	13.31	14.00	24.19	24.00	14.00	38.00	12.00	31.25	-
Meghalaya	6.00	3.00	7.00	5.24	12.00	9.00	7.50	-	25.00	37.25
Mizoram	12.00	22.04	14.00	14.00	16.00	29.00	16.00	-	62.50	25.00
Nagaland	18.00	3.00	14.00	18.38	32.00	16.00	46.00	9.00	62.50	-
Sikkim	15.00	15.00	14.00	17.05	24.00	19.00	38.00	12.00	31.25	10.38
Tripura	6.00	5.87	7.00	7.29	7.20	11.00	18.80	9.40	37.50	34.90
KVIC for NE States	*	270.25	*	397.00	*	330.00	600.00	603.25	268.75	134.37

T-Target; A-Achievement; * Separate allocation was not made.

2.54. When asked about the reasons for variations in physical and financial targets and achievements in the North-Eastern States regions during 9th Five Year Plan, the Ministry replied as under:-

“The Ministry has been pursuing North Eastern Region States, including Sikkim, to aim at high targets matching with utilizing 10 per cent of the financial allocation for NPBD. Accordingly, higher physical targets were allocated but none of the North-Eastern Region States accepted the targets for want of matching State Plan budget to meet the provision of State subsidy. In the year 2000-01, the amount of Central subsidy was enhanced to almost 90 per cent of the estimated capital cost of small size plants as worked out by KVIC. However, the figures of cost estimates worked out by State Government were 1.5 to 2 times more than the estimates of KVIC”.

2.55. When asked about the number of non-functional plants in the country and action taken to restart those plants, the Ministry in a written note stated:-

“Information provided by the Programme Evaluation Organisation, Planning Commission, which has conducted the latest evaluation survey study in 19 States in the year 2000-01, indicate that on an average at the national level about 87.3 per cent of the surveyed plants were found in working condition of the remaining, 3.6 per cent plants were found incomplete and 9.1 per cent plants were dismantled due to the use of poor quality construction materials, improper construction of plants, natural calamities caused structural damages to plants and lack of interest in operating and maintaining the plants properly. A scheme of repair of old non-functional biogas plants was initiated in the year 1999-2000. A grant of up to a maximum of 50% of the applicable Central subsidy is given for repairing structurally defective plants. So far the States of Maharashtra, Orissa, Sikkim and West Bengal have taken action to implement this scheme and about 16,300 plants are expected to be repaired in these States. Other States have also been requested to formulate specific proposals”.

2.56. Confirming further, a representative of the Ministry of Non-Conventional Energy Sources during evidence stated:-

“.....we had received a statement from the Planning Commission indicating the total commissioning of 87.3 per cent of the last five years and dismantling of 9 per cent plants during the last five years. We are trying to obtain further details State-wise and also the details of how many have been functioning and how many are incomplete. Remedial measures would be taken accordingly”.

2.57. When asked about the steps taken to improve the functionality of the plants, the Ministry replied:-

“The average cost of repair mentioned in the proposals of States Governments ranges from Rs.1,200/- to Rs.4,500/- per plant. The Central grant for repair is about Rs.900/- to Rs.1,750/- per plant depending upon category of beneficiaries and area. Higher repair charges are given in North Eastern Region States. Steps taken to improve efficiency of working plants include: (i) training of users, particularly women, in day-to-day proper operation and maintenance of biogas plants, including daily use of recommended quantity of cattle dung and water; periodic removal of condensate water from the pipeline and cleaning of burners; periodic removal of digested slurry from outlet tank, when it does not flow automatically; (ii) monitoring of implementation of free maintenance warranty for the first three years after installation of plants; and (iii) starting concurrent monitoring of construction of biogas plants on a sample basis through independent organizations”.

2.58. In regard to lack of interest by the local masses including Panchayats and local NGOs in harnessing the Biogas potential in the country and the correction action taken thereon, the Ministry replied:

“Biogas plants are already benefiting more than 30 lakh families in improving quality of life of women folk. Panchayats and non-governmental organizations are active at present in only a few States, namely, Andhra Pradesh, Gujarat, Maharashtra, Himachal Pradesh, Kerala and West Bengal. Repeated efforts are made to persuade other States/UTs. The major reasons for disinclination of the local masses are: (i) lack of affordability on the part of majority of small and marginal farmers to invest in biogas plant, which cost about Rs.8,000/- to Rs.12,000/- ; (ii) reduction in the amount of Central subsidy by Rs.500/- per plant in 1998-99; and (iii) promotion of Liquefied Petroleum Gas (LPG) on priority basis in some States, such as, Andhra Pradesh, Tamilnadu, Himachal Pradesh, etc. The corrective action proposed to be taken are: (i) promotion of cheaper model made of ferro cement; (ii) revival of old non-functional plants; (iii) awareness raising among women members of gram panchayats through one-day orientation programmes at the block level; and (iv) dovetailing the biogas programme with the scheme on organic farming of the Ministry of Agriculture during the 10th Plan period”.

2.59. As a result of R&D efforts, the cost of construction of the conventional steel gas holder plant type (KVIC model) was brought down by about 30 per cent and a fixed dome model, called Deenbandhu, which was 50 per cent cheaper, was developed. The cost of Common size plant is about Rs.8,500 to Rs.10,000. A fixed dome model made of ferro cement, which cost about 15 per cent less has been developed and approved for promotion also. When asked about the reasons for sluggish growth rate of expansion of these cheaper models in our country and the steps taken to expand the use of these models, the Ministry replied:

“The fixed dome model made of ferro cement was approved for promotion in the month of March, 1999. Since then, its promotion has spread from a small area, i.e.,

in and around Idukki district in Kerala to States of Andhra Pradesh, Tamilnadu and Karnataka, besides throughout Kerala, through involvement of non-governmental organizations, training of trainers and masons and organizing orientation courses for the staff of State nodal departments and agencies. Within a period of less than two years, over 10,000 such plants have been set up, which is a satisfactory progress for any new model. The steps proposed to be taken to cover other States and intensify promotion in Southern States as well include: (i) training of trainers and masons through Biogas Development and Training Centres; and (ii) publicity and awareness campaigns in the areas which are suitable for the model. Generally the users are able to operate and maintain biogas plants, including the new fixed dome model made of ferro cement. However, in case of the new model, as the structure is thin, i.e. 25 mm, the users, who are accustomed to thick brick masonry structure, show initial hesitation in opting for such plants. This problem is being overcome through awareness raising one-day courses in the areas suitable for the new model. The new model is suitable for high humidity areas, where good quality bricks are not available at a reasonable price. However, the construction of the new model requires high skills and strict quality control measures. Thus, it could be promoted only in the suitable areas after adequate measures are taken for training local masons and supervisors”.

2.60. National Project on Biogas Development (NPBD) is one of the most important components of the Rural Energy Programme implemented by the Government. The programme provides direct benefits to rural families, particularly women, in terms of reducing the drudgery involved in collecting fuel materials from long distances, minimizing the health hazards and improving their standard of living. The Committee were informed that it would take another 20 years to harness about 80 per cent of the estimated potential at an average rate of 3 lakh biogas plants per year. However, the Committee are not convinced with the assumption of the Ministry. The Committee have observed that a cumulative total of the established biogas plants increased from 28.63 lakh during March, 1999 to 32 lakh by the end of March, 2001. The average rate of harnessing the biogas potential therefore, stands at 1.18 lakh per annum. At this rate, it would take more than 80 years to harness the entire estimated potential which has now grown from 120 lakh to 130 lakh. The Committee find that high initial cost of installation of biogas plants is one of the reasons for sluggish growth rate of harnessing the potential. The Committee note that the cost of common size plant is in the range of Rs.8,500 to Rs.10,000. A fixed dome model made of ferro-cement referred to as Deenbandhu model costing about 15 per cent less, has been developed and approved for promotion also. It is becoming popular in Andhra Pradesh, Kerala, Karnataka and Tamil Nadu. Over 10,000 such plants have been installed within a span of two years only. The Committee desire that this cheaper model be popularised after making suitable design adjustments / improvements so as to suit users of different geographical regions taking into consideration, the different raw materials available locally. This will ensure the realization of 15 lakh Biogas plants by the end of 10th and 11th Five Year Plan period. The Committee further desire that R&D efforts especially for community based biogas plants should be stepped up so as to enhance the rate of spreading the biogas plants to the tune of 3 m plants annually. The Government should also address to the problems of inadequate maintenance and servicing at the village and block level.

2.61. One of the main reasons responsible for the sluggish growth rate in harnessing the potential is the limited Central budgetary support for the NPBD programme. The Committee found that a Plan outlay of Rs.260.00 crore was allocated and a target of Rs.12 lakh biogas plants fixed for the 9th Five Year Plan. However, the financial allocation was revised to Rs.286.00 crore with a target of 10 lakh biogas plants during mid-term appraisal. Taking into consideration inadequate allocation, the Ministry requested the Planning Commission for additional amount of Rs.65.60 crore to match the revised physical Plan target. Strangely, it was not conceded to. In the opinion of the Committee, the Planning Commission should ensure that the programme like National Project on Biogas Development (NPBD) is not deprived of the matching funds as it has a direct bearing on improving the quality of life of the rural population, particularly the women. At the same time, the Committee recommend that the Ministry should chalk out their own plan of action so as to utilise the budgeted amount and realise their physical targets fully.

2.62. The Committee are perturbed to note that the NPBD programme has failed miserably in the North-Eastern States in spite of extending 10% of MNES total Domestic Budgetary Support (DBS) to the North-Eastern States including Sikkim for various renewable energy sources programmes including NPBD. Unfortunately, no investment was made in the States of Arunachal Pradesh, Assam, Manipur and Nagaland and in all the other States less than 50 per cent of the allocated funds were utilized during the year 2001-2002. The Committee also find that none of the North-Eastern Region States accepted the targets fixed for NPBD for want of matching State budget to meet the provision of State subsidy. The Committee, therefore, recommend that the Government should vigorously pursue all the North-Eastern States to give top priority to all the renewable energy sources programmes, specifically the programmes like NPBD.

2.63. The Committee find that the total estimated potential of the family type biogas plants in the country is 130 million and the average rate of harnessing the Biogas potential stands at only 1.18 lakh per annum. At this rate many more years will be required to harness the Biogas potential in the country. The Committee also find that the lack of ability of majority of small and marginal farmers to invest in biogas plant costing about Rs. 8,000 to 12,000 is one of the reasons causing slow rate of spread of the biogas plants in our country. The Committee further find that the recently developed cheaper methodology of on-site construction of Deenbandhu Model with ferro – cement is becoming popular in Andhra Pradesh, Kerala, Karnataka and Tamil Nadu. Over 10,000 such plants have been installed within a span of two years only. The Committee, therefore, recommend that all out efforts should be made to strengthen R&D efforts in this area and to develop the cheaper model having better construction methodology and wide applicability like in situ ferro cement Deenbandhu model should be promoted throughout the country so that the rate of spread of the biogas plants may be raised up to reach 3 million plants annually.

D. VILLAGE ELECTRIFICATION PROGRAMME

There are more than half a million villages in India and the total rural population is over 700 million. The Planning Commission has recognized rural electrification as the prime requirement for rural development – for improving the quality of their life and their agriculture production. India initiated a large rural electrification programme in 1969 and has achieved phenomenal progress by electrifying over 85 per cent of the villages. However, 80,000 villages are yet to be electrified and a majority of them are in remote

areas with no access to the grid power. There are 18,000 hamlets and settlements too which are likely to remain unelectrified due to their inaccessibility to the grid.

2.65. A review of rural electrification programme by the Planning Commission (Planning Commission, 1991) showed that:-

- low tariff charges for agriculture result in heavy financial losses to SEBs as well as wasteful use of electricity and water;
- there are high T&D losses due to dispersed loads with low-load factors;
- despite extensive rural electrification, there are over five million diesel pumps using over 5 Mt of diesel, even though the operation and maintenance cost of diesel pumps is high;
- rural electrification needs to be treated as an integral part of rural energy supply for promoting rural development.

2.66. All these factors highlight the need for an alternative approach to rural energy. The Planning Commission itself recommends the development of decentralized power generation systems for which renewables are ideally suited. Here, renewables such as bioenergy, solar photo voltaic and micro-hydro have a critical role to play. In a situation of scarcity of power, rural consumers are likely to receive low priority in power supply compared to urban and industrial sectors. Thus, for reliable and quality supply of electricity for rural areas, decentralized renewable options need to be considered in India.

2.67. The problems associated with rural electrification have been engaging the attention of the Central Government and have also been discussed with State Governments. As a result of consultations and deliberations at different levels, the following consensus has emerged:-

- (i) The country should achieve 100% electrification in a time-bound manner.
- (ii) The approximately 62,000 villages located in accessible areas are to be electrified by 2007 through conventional grid extension.
- (iii) The 18,000 or so remote villages will be electrified areas are to be generation through non-conventional sources by 2012.
- (iv) Special financial arrangements will be evolved and additional resources mobilized for achieving the above goals.

2.68. On the basis of the above consensus, the Ministry of Power and the Ministry of Non-Conventional Energy Sources developed plans for achieving 100% village electrification by covering the segments allotted to them (62,000 villages and 18,000 villages respectively). The implementation of these plans began during the year 2001-2002. Some further details are still being worked out by both Ministries.

2.69. Based on the data compiled by Rural Electrification Corporation (REC); Ministry of Power, about 18,000 villages have been recognised at the start of the 9th Five Year Plan, which cannot be electrified in the conventional manner by extending the grid. Most of these villages are believed to have population of less than 500 and located in far flung and difficult geographical regions including forests, islands, deserts and hilly areas. The number of such villages situated in different States are given below:-

Sl.No.	State	No. of remote villages
1.	Arunachal Pradesh	788
2.	Assam	330
3.	Bihar	2,000
4.	Jammu & Kashmir	203
5.	Madhya Pradesh	1,300
6.	Manipur	166
7.	Meghalaya	2,490
8.	Mizoram	72
9.	Orissa	3,390
10.	Rajasthan	3,000
11.	Tripura	97
12.	Uttar Pradesh	3,600
13.	West Bengal	550
	Total	17,986
	Say	18,000

2.70. Though the number of the 18,000 unelectrified villages have been estimated by the Ministry of Power, they have not yet been located so far. It has been decided that the Ministry of Power would provide the complete list of 18,000 remote villages alongwith their locations in various States / Union Territories to the MNES in consultation with the various States / Union Territory Governments. The list is awaited.

2.71. Informing further, the Secretary, Ministry of Non-Conventional Energy Sources stated during evidence:-

“.....list was to be supplied by CEA at the instance of Ministry of Power..... this was to be given by 31st March last year, and I know that they had asked the CEA to get this”.

2.72. As regards the coordination with the Ministry of Power in the implementation of Rural Electrification schemes, the Secretary, MNES in a written note furnished to the Committee, stated as under:-

“The Ministry of Power is responsible for the overall rural electrification in the country. The Ministry provides grants and other support to the Rural Electrification Corporation which in turn finances rural electrification projects in various States. The Central Electricity Authority under the Ministry of Power compiles the statistics pertaining to village electrification and energisation of pump sets on a monthly basis from States and Union Territories. The Ministry of Power has prepared a Plan for achieving 100% village electrification in a time bound manner. As MNES is implementing a part of the electrification programme, it is natural for it to interact closely with the Ministry of Power. As brought above, the Ministry has been interacting with the Ministry of Power on issues such as definition of electrified village, identification of unelectrified villages and financing arrangements. Though there was some delay in resolving certain matters by the Ministry of Power, MNES has not allowed this to stall its programme. The Ministry has gone ahead with the implementation within its mandate even while maintaining full coordination with the Ministry of Power”.

2.73. Elaborating further a representative of the Ministry replied during evidence as under:-

“.....there are about 80,000 villages still to be electrified. Of this, nearly 62,000 villages are considered where conventional grid can be extended and that is with the Ministry of Power. 18 thousand villages are believed to be in areas which cannot be served by conventional grid. It has to be electrified by local generation, through non-conventional energy sources. This has been given to us. There is a clear understanding between the Ministry of Power and us in these areas. We have evolved the technologies, we have identified locations and over a 10 year period, by 2012, we intend to cover all these 18,000 villages”.

2.74. Further clarifying, the Secretary Ministry of Non-Conventional Energy Sources stated during evidence as under:-

“As far as actual electrification is concerned, they are not involved. We directly involved. But the Ministry of Power is the nodal Ministry for all-village electrification. For example, for the funding pattern, we go to the Cabinet through them, etc”.

2.75. Considering the backward nature of remote areas and the poverty conditions prevailing in major States such as U.P., Bihar, Orissa and Assam, it was thought that Village Electrification Programme for those areas may require to be supported through special financial terms. MNES therefore proposed that 90% of the cost be met by grant from the Central Government and the balance 10 % to be met by the State Government or by the beneficiaries by way of loan to the users. This proposals was included in the overall Action Plan for 100% village electrification being prepared by the Ministry of Power for Government's approval. The Ministry of Power has not yet sought approval of the Government for the overall programme.

2.76. When asked how MNES propose to the electrify the unelectrified villages in the absence of identification of villages by Ministry of Power, the Ministry in a post-evidence reply stated as under:-

“The Ministry of Power undertook to compile a list of unelectrified villages including villages located in remote and difficult areas which are to be electrified using non-conventional energy sources. This exercise is still in progress and a complete State-wise list of villages is not yet available. However, the Ministry of Non-Conventional Energy Sources did not wait for the list from the Ministry of Power. It asked all the State agencies to start compiling lists of remote villages and submit proposals for their electrification to Ministry of Non-Conventional Energy Sources. Separately, the Ministry got surveys done in three States is namely Rajasthan, Chattisgarh and Orissa and the list of villages in these States is available. The Government of Assam has submitted a complete list of remote villages in that State; the list of unelectrified villages in Ladakh has also been received. Kerala submitted a list of tribal hamlets which cannot be electrified by conventional means. Based on the proposals received, the Ministry has already sanctioned the electrification of 300 villages and 200 hamlets as mentioned above. As there was delay in working out special norms for the village electrification programme, the Ministry sanctioned projects based on the norms of the existing schemes and released funds to the implementing agencies. During the 10th Plan, the Ministry is making a separate provision for supporting surveys to identify the

potential villages and the appropriate technologies to be used for electrification. Coordination will be maintained with the Ministry of Power to ensure that the overall task of electrifying remote village is completed by the year 2012”

2.77. The Villages Electrification Programme was initiated by MNES during the year 2001-2002. Against the financial outlay of Rs.2,000 lakh (BE) only Rs.435 lakh were spent (upto 31.12.2001) during the year 2001-2002. During the year 2002-2003, a sum of Rs.61.50 crore has been allocated to electrify 500 villages under this programme. All these villages are proposed to be electrified through locally available renewable energy options like Solar Photovoltaics (SPV), Small Hydro and Biomass. It has been proposed to electrify all these villages within the next two Plan periods i.e. by the year 2012. 5000 of these villages are proposed to be electrified during 10th Five Year Plan, using mainly Solar Photovoltaics, Biomass and Small Hydro Power Technologies.

Activities under the Village Electrification Programme

2.78. The programme covers, inter-alia the following activities:

- (i) Surveys and studies aimed at identifying unelectrified villages, assessing the resources available in the villages, energy requirements of the community and the technology appropriate for electrification in the identified villages.
- (ii) Installation of solar home system, lighting and other systems for community purposes, solar pumps and power generating systems based on solar energy, small hydro power, biomass, wind and other renewable energy sources. A combination of these energy sources, including a small contribution from diesel or other fossil is also permitted for generation of electricity.
- (iii) Training, institutional development, capacity building, development of maintenance services, etc.
- (iv) Surveys and studies aimed at monitoring the progress in individual projects or the programme as a whole as well as those aimed at obtaining technical and economic data, user feedback, impact assessment, etc.
- (v) Business meets, publicity and awareness promotion activities.

Implementation Arrangement of Village Electrification Programme

2.79. Three broad models are proposed to be followed for electrification of villages under this programmes:-

- (i) Electrification of villages through State renewable energy agencies / electricity boards / power departments / corporate entities set up by the Central or State Governments.
- (ii) Implementation of projects by Non-Government organizations, panchayati raj institutions, cooperative societies and similar non-profit bodies.
- (iii) Giving a concession or licence for electrification of a villages or a cluster of villages to a corporate body or entrepreneur who will bring a part of the investment and operate the project on a commercial basis.

In all cases, arrangements will be required to be made for long term maintenance and servicing as well as collection of monthly charges and other dues from users.

2.80. When asked about the details of the present status of schemes in regard to different modes of Rural Electrification, the MNES replied as under:-

A Solar Photovoltaic

The village electrification programme has been initiated during the current year i.e. 2001-2002 only. During the year 2001-2002, projects for SPV electrification of villages in many States i.e. Assam (36 villages in Cachar district), Chattisgarh (90 tribal villages in Dantewade District and 30 villages in Bilaspur District), Kerala (173 remote SC & ST colonies), West Bengal (203 villages) and Ladakh in Jammu and Kashmir (57 villages and 27 hamlets) are under implementation. Some of these projects have been sanctioned under the SPV programme during 2000-2001 and 2001-2002.

B Biomass Gasifier

There was no separate budgetary allocation or physical targets for villages electrification through biomass gasifier systems in the 9th Plan. However, under the National Biomass Gasifier programme, village electrification was one of the application areas. During 1999-2000, an amount of Rs.11.92 lakh was released, and 6 village electrification projects were taken up; during 2000-2001 (upto 31.12.2001), an amount of Rs.72.13 lakh was released, and eight village electrification projects, were taken up.

C. Small Hydro Power (SHP)

Under Village Electrification Programme through SHP, 6 projects have been sanctioned in the State of Uttaranchal and 4 projects in the State of Arunachal Pradesh. These projects would cover electrification of 34 villages in these States.

2.81. When pointed out that funds from different programmes like Rural Infrastructure Development Fund (RIDF), Accelerated Power Development Programme (APDP) and Pradhan Mantri Gramodaya Yojana (PMGY) are made available to the States and agencies for undertaking rural electrification through Non-Conventional Energy Sources clarifying the position, the Ministry in a note stated as under:-

“The Ministry is making all out efforts through State agencies to mobilize additional resources, including MPLAD funds. The Ministry of Power has also clarified to State Governments that funds under the PMGY can also be utilized for electrification through Non-Conventional Energy Sources”.

2.82. The Committee have been informed that to accelerate the Village Electrification Programme in Sunderbans, WBREDA have proposed some NCES projects. When the Committee enquired about Durgaduani Tidal Project, coming up at Sunderbans areas of West Bengal, the Ministry of Non-Conventional Energy Sources in a note submitted as under:-

“The proposal of WBREDA for a Tidal Power Project proposed for Sunderbans is under examination. The Ministry proposes to request Planning Commission and the Ministry of Finance to consider if they can provide 90% of the project cost in this regard”.

2.83. Supplementing further, a representatives of Ministry of Non-Conventional Energy Sources during evidence stated:-

“..... a detailed project report has already been received in the Ministry were 90 per cent funding from the Ministry has been requested. The total project cost is Rs.29.06 crore for 3 MW capacity plant. During 2002-2003, the provision is there for Rs.4 crore. If required, we will propose to re-appropriate the funds. It is under examination and in the next two-three months a decision will be taken. Sir, as the barrage has to be constructed across the river, we have requested the State Government of West Bengal, WBREDA to issue a public notice so that there is no objection at later stage. as per the DPR submitted by West Bengal, it is to be completed in five years and three months. This is the first project of its kind that has come to us. The DPR has come and it has various other implications including environmental implications. It will take a little bit of more time to examine the proposal. But we will certainly see that no time is wasted”

2.84. When further enquired, whether any wind project is also being considered at Sunderbans area, a representatives of Ministry of Non-Conventional Energy Sources during evidence stated:-

“.....a project of 500 KW and 10 machines of 50 KW each will be installed in this. This is a wind-diesel project where we are trying to connect, for the first time, wind turbines to the existing diesel generating sets on the island. We propose to install 10 wind turbines. In the first phase, we have taken up two turbines of 50 KW each. This has just been commissioned. In fact, I got an indication that on 7th of April, they are wanting to have a formal commissioning ceremony with the Chief Minister. We will be taking up the next phase as soon as we have some results start coming out from the first phase. This summer, hopefully we will get some feed back on the operation of this project. So, before next summer, we are hopeful that the whole project will get commissioned. This is going to be the first wind-diesel project in the country”.

2.85. When asked whether Ministry of Non-Conventional Energy Sources propose to increase the subsidy admissible for Non-Conventional Energy Sources for Sunderbans and bring at par with North-Eastern Region, the Ministry in a written note stated:-

“The proposal for providing higher rate of subsidy for Sunderbans at par with North-Eastern Region is under consideration in the Ministry”.

2.86. The features of renewable energy technologies characterised by small-scale capacities for decentralized applications, modular nature of the technologies and their suitability to meet specific energy needs are ideal for meeting diverse rural energy needs rather than meeting energy needs of mega cities and large industrial towns. Thus, it becomes all the more important to explore the possibilities and feasibilities to meet all the energy needs of all the 18,000 unelectrified villages in an integrated manner. For this, it is imperative to assess the energy needs and resources available in each and every village and then develop renewable energy packages to meet the energy needs for different villages in a sustainable and financially viable manner. The Committee, therefore, recommend that a methodology be developed for arriving at an optimum mix of various renewable

energy technologies based on technical, financial and social parameters. An integrated approach, apart from developing and implementing the technology package, would necessitate the development of institutional mechanisms for planning, implementing and managing the integrated energy plans necessary for smooth maintenance and operation of various non-conventional systems used for electrifying all the 18,000 villages through Village Electrification Programme. The Committee desire that Government should take necessary action in this regard.

2.87. The Committee are happy to learn that all the 18,000 unelectrified villages which cannot be electrified through conventional grid power will be electrified through MNES under the Village Electrification Programme by the year 2012 A.D. 5000 of these villages are proposed to be electrified during the 10th Five Year Plan using mainly Solar Photovoltaics, Biomass and Small Hydro Power Techniques. The Committee find that the Ministry of Power, who were assigned the responsibilities of identifying such villages are yet to furnish the list. The Committee appreciate that the Ministry of Non-Conventional Energy Sources themselves have surveyed 3 States viz. Rajasthan, Chattisgarh and Orissa. The Government of Kerala and Assam have also furnished the lists of villages to be electrified through non-conventional means. But the Committee are perturbed to note that only a paltry sum of Rs.4.35 crore was spent out of Rs.20.00 crore during the year 2001-2002. Now, Rs.61.50 crore have further been earmarked to electrify 500 villages for the year 2002-2003. The Committee are sceptical about achieving the target by the Government. The Committee cannot but deplore the way the Government have initiated a programme like Village Electrification Programme without having a comprehensive list of identified villages. The Committee, therefore, recommend that the Ministry of Non-Conventional Energy Sources should, without waiting for identification of villages, also assess suitability of various sources of renewable energy in each case and the availability of raw materials to be used as inputs for various renewable energy sources / systems and thereafter prepare a technology package for them. The Committee also desire that the Government should leave no stone unturned and meticulously act to achieve the target of electrifying 18,000 villages by 2012 A.D.

2.88. The Committee concur with the three models suggested for implementation arrangements for village electrification. The Committee are of the view that such arrangements will ensure maintenance, servicing and collection of monthly charges or other dues from the beneficiaries. The Committee recommend that authority responsible for the maintenance of the systems should get clearance certificate from the village sarpanch every 3 months that the system is working satisfactory. The Committee would like that the Government should share their experience of the working of such a model.

2.88.a It has been brought to the notice of the Committee, lack of maintenance and after sale services especially of batteries, have affected Solar Photovoltaics Programme, to a large extent. The Committee, therefore, desire that a close liaison should be established with the local Panchayat and bodies, who should certify the functionality of the system after every 3 months. The flow of funds for the programme should be contingent upon furnishing of functionality certificate by the Panchayats. Such a clause should be ingrained in the warranty agreement itself.

2.88.b The Committee have also observed the untapped solar power potential in the States of Uttranchal, tribal districts of Bihar, especially Kaimoor/ Champaran district and Rajasthan. The Committee desire that Ministry of Non-Conventional

Energy Sources should explore the possibility of stepping up of harnessing Solar Power in these areas. The Committee would like to be apprised of the action taken in this regard. The Committee also desire that preference should be given to tribal hamlets, for electrification through Solar Power Programme.

2.88.c It has been brought to the notice of the Committee that there are fake manufacturer / supplies of various equipments, such as Solar Modules / Cell, etc. used in the Solar Power Programme. The Committee recommend that before placing order for procurement of any equipment, Ministry of Non-Conventional Energy Sources /State Nodal Agencies / or any procurement agencies should ascertain the genuineness of the firm / company. The Committee also recommend that any registered genuine company / firm should be permitted to supply such equipments. The Committee also desire that Government should monitor the position closely, so as to ward off any bogus / fake companies. The Committee also recommend that training for O&M should form a component of supplies, for effective implementation of the programme.

2.89. The Committee appreciate the definition of an electrified village whereunder, a village is deemed to have been electrified, if 60% of households have accessibility to power. The Committee desire that such a definition should be accepted by other agencies involved in Rural Electrification, such as Ministry of Power.

2.90. The Committee find that taking into consideration the backward nature of the remote areas and prevalent poverty conditions in major States of U.P., Rajasthan, Bihar, Orissa, tribal areas of Kerala, etc., the village electrification programme ought to be supported through some special financial dispensation. Accordingly, the MNES had proposed that 90% of cost should come from the Central Government in the form of grant and the balance 10% be borne by the State Government or by the beneficiaries by way of loan to the users. This proposal was included in the overall action plan for 100% village electrification being prepared by the Ministry of Power for Government approval. Surprisingly, the Ministry of Power did not as yet seek approval of the Government. The Committee take a serious view over this and desire that the Ministry of Power should take the approval of the Government without further loss of time. The Committee also find that 3943 out of 18,000 unelectrified villages belong to the 6 North-Eastern States viz. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Tripura. The Ministry have further informed the Committee that higher physical targets were set for the cheaper programme like NPBD but none of the States could provide 10% of matching fund against 90% of Central funding. The Committee wonder as to how these villages belonging to the 6 North-Eastern States could be electrified on the basis of above-mentioned proposal of 90% grant from Central Government and 10% grant from State Government when none of the North-Eastern States accepted the targets even for the programme like NPBD which is relatively cheap, for want of matching State Plan budget to meet the provision of State subsidy. The Committee desire that MNES should source 10% contribution from FIs on soft term lending. The Committee also desire that MNES should formulate bankable proposals for village electrification for 10% funding from MPLAD or similar schemes. Even the North-Eastern Council could be approached to contribute 10% component to cover the villages in the North-East.

2.91. The Committee have been informed that in some of the States, notably U.P. , MLAs are entitled to sponsor a fixed number of villages of their choice for Rural Electrification. The Committee are of the view that an elected representative should have the prerogative to sponsor social or economic development works, including Village Electrification. The Committee recommend that the system in vogue in U.P. should also be introduced at the Centre. The Committee would like to be apprised of the action taken in this regard.

2.92. The Committee find that for accelerating the pace of Village Electrification Programme, WBREDA have submitted that 3 MW tidal and wind power projects for the consideration of the Central Government. The Committee desire that these projects should be examined and cleared expeditiously after ascertaining their techno-economic viability. The Committee also recommend that taking into consideration the backwardness and remoteness of Sunderbans area, all Ministry of Non-Conventional Energy Sources projects in the area should be entitled for 90% grant and 10% loan. The Committee appreciate the role performed by WBREDA in ensuring electricity through the means of non-conventional energy sources in the far-flung and remote areas like Sunderbans. The Committee desire that Sunderbans type of experiment be replicated throughout the length and breadth of the country.

2.92.a The Committee have learnt that Durgaduani Tidal project (3.0 MW) at Sunderbans is pending with the Ministry for approval. The project would prove a boon for the people living in Sunderbans which cannot be electrified through conventional grid power. Considering the fact, that this would be the first Tidal Power Project in the country, the Committee recommend that this project should be treated as a ' Demonstration Project', and cent per cent grant be provided by the Central Government. Similar demonstration project may also be taken up in other parts of the country.

E. Energy Recovery from Urban and Industrial Waste:

Rapid urbanization and industrialization have led to the piling up of waste materials of diverse nature generated from human activities not only in big cities but also in smaller towns. This in turn has led to increasing pollution and environmental degradation posing considerable hazards to public health.

2.94. In recent years, technologies have been developed which not only help reduce the quantity of wastes and improve their quality to meet the required pollution control standards but also generate substantial quantity of decentralized energy.

2.95. According to a conservative estimate, about 30 million tonnes of solid wastes and 4,400 million cubic metres of liquid wastes are generated every year in urban areas from household and commercial activities. In addition to this, the manufacturing sector makes its own contribution to the quantum of waste generated. From the present estimated availability of garbage, there is potential to generate about 1,700 MW of power – 1000 MW from municipal wastes and 700 MW from industrial wastes, which is likely to increase to about 2500 MW by the end of the 10th Five Year Plan.

2.96. The MNES started promoting these technologies through the National Programme on Energy Recovery from Urban Municipal and Industrial Wastes and the UNDP / GEF assisted project on Development of High Rate Biomethanation process as a means of reducing Green House Gases Emission during the year 1995.

2.97. Year-wise, financial and physical targets and actual achievements during the 9th Plan period are as follows:-

Year	Financial (Rs. in crore)		Physical (MWe)	
	Target	Achievement	Target	Achievement
97-98	8.00	0.62	10.00	2.00
98-99	6.00	3.55	5.00	2.00
99-2000	12.00	6.37	6.00	8.40
2000-2001	20.00	8.00	10.00	1.00
2001-2002	15.00	8.00 (upto 15.3.2002)	10.00	4.90 (7 MWe under execution)

2.98. When asked about the reasons for variations in physical and financial targets and achievements, the MNES stated:-

“Due to ‘waste-to-energy’ being a new subject, there are many reasons for slippages in the targets fixed for this programme. Some of the major reasons are as follows:

- Absence of a conducive policy in most of the States for encouraging setting up of waste -to-energy projects;
- Lack of awareness at various levels;
- Lack of confidence among project promoters and financial institutions due to non-existence of many demonstration projects in the country;
- Long time taken by Financial Institutions in sanctioning loans and finalizing agreements;
- Multiplicity of agencies leading to delays in the clearances from the State Government departments / urban local bodies in respect of allotment of land, supply of garbage and power purchase agreements;
- High cost of waste-to-energy projects due to the requirement of an elaborate system for segregation and pre-processing of waste, imported technology and equipment”.

2.99. As regards the drawing up of long-term perspective plan to harness the overall potential in a time-bound manner, the Ministry in a written reply stated:-

“Ministry has taken up the task of preparing a National Master Plan for overall development of waste-to-energy sector in the country. The Plan will include assessment of potential of recovery of energy from wastes in Urban and Industrial sectors, various waste to energy conversion technologies available worldwide, status of Research and Development, required financing mechanisms, prioritization of projects, etc. This will help in identifying various potential areas and in making proposals for the Five Year Plans in future. A target of 150 MW has been proposed for the 10th Five Year Plan. Also, a target of 250 MW is being considered for the 11th Plan period. As a result of various initiatives taken by this Ministry, waste-to-energy projects with a total capacity of about 21 MWe have been installed in the country so far. In addition, projects with a capacity of 7 MWe are under execution and projects of about 25 MWe capacity are under advanced stages of development”.

2.100. Informing further the Ministry stated:-

“All the State Governments are being advised / persuaded time and again to issue policy guidelines in respect of allotment of land on long term basis at nominal lease rent, supply of garbage free of cost at project site and facilities for evacuation, purchase and sale of power generated from waste-to-energy projects. The Secretary, MNES again addressed a separate communication to Chief Secretaries of all the State during the year 2001-02. Besides taking it up during the annual conference of renewal energy held on 31st May and 1st June, 2001 at New Delhi, the matter of proper policy support is taken up with respective States during visits of H'on'ble MOS(IC), NES as well as senior officials to various States. Secretary, MNES held a separate meeting at Shillong with senior officers of all the North

Eastern States to convince them of the necessity to have conducive policies for attracting renewable energy projects to their States”.

2.101. When asked if the Ministry of Non-Conventional Energy Sources taken any policy decision to ensure continuous inflow of urban and industrial wastes from municipalities, market committee, etc to the project site, the Ministry stated:-

“State Government are being requested on continuous basis to announce policy measures for supporting setting up of projects for recovery of energy from wastes. Supply of wastes free of cost at the project sites is an important item of the policy guidelines being given to the State Governments. While 3 States namely Uttar Pradesh, Maharashtra and Punjab have announced policies for supply of wastes at project site free of cost, the State of Tamil Nadu has declared a policy for providing wastes free of cost at the dump sites, the State of Madhya Pradesh has agreed to provide the wastes for the project under development at Bhopal and Indore”.

2.102. Furnishing the details of various fiscal and financial incentives offered to the developers to harness energy from waste, the MNES stated:-

“Various financial and fiscal incentives being currently provided under waste-to-energy programme are as follows:-

A. Financial Incentives:

i. **Commercial Projects**

Financial Assistance as interest subsidy for reducing the rate of interest, for the entire loan repayment period, to 7.5%, capitalised at an annual discount rate of 12% or as decided by MNES in future, to FIs/Lead FI as follows:

Type of Projects	Maximum eligible Interest Subsidy to reduce the interest rate to 7.5% (Rs. in crore/MWe)	
	Urban and Municipal Waste	Industrial Waste
Waste to Power	2.00	1.50
Waste to fuel / steam	0.50	0.50
Fuel to power	1.00	1.00

ii. **Demonstration Projects**

Financial assistance of up to 50% of capital cost of the project limited to Rs. 3.00 crore per MW for innovative demonstration projects for power generation from Municipal Solid Waste and for selected Industrial Wastes such as dairy, fruit and vegetable processing and press-mud available at sugar factories.

iii. **Power generation at Sewage Treatment Plants (STPs)**

Financial assistance of up to 50% of the incremental capital cost for generation of power from biogas.

B. Other Incentives

- i. Incentives to Urban Local Bodies, Municipal Corporations and State Nodal Agencies

Urban Local Bodies: Financial Incentives @ Rs. 15.00 lakh per MW to Municipal Corporations/Urban Local Bodies, for providing garbage free of cost at the project site and land on long term (30 years +) on nominal lease rent basis. However, this incentive will be reduced to 50% in case of waste-to-fuel / steam or fuel-to-power projects.

State Nodal Agencies: Financial incentives @ Rs. 5.00 lakh per MW to State Nodal Agencies for promotion, coordination and monitoring of projects. However, this incentive will be reduced to 50% in case of waste-to-fuel / steam or fuel-to-power projects.

Financial Institutions: A service charge of 2% of the actual subsidy channelised through the FI to the promoter or other FIs, subject to maximum of Rs. 2.00 lakh per project.

- ii. Preparation of DPR/ TEFRR etc.: Up to 50% of the project cost subject to a maximum of Rs. 2.00 lakh

C. Fiscal Incentives

Fiscal incentives like concessional custom duty on imports and 100% depreciation in the first year itself, etc., as applicable to other renewable energy projects, are also applicable in the waste-to-energy programme”.

2.103. Besides providing financial support to promoters for setting up projects for generation of power from waste Government is offering financial incentives to local bodies and municipalities for providing land at nominal lease rent and supply of wastes at project site for promotion of project for generation of power from waste @ Rs.5.00 lakh per MW. Financial Incentive @ Rs.5.00 lakh per MW is also being offered to State Nodal Agencies for promotion of Waste-to-Energy projects. Further, Municipal Solid Waste (Management and Handling) Rules 2000 notified by Ministry of Environment and Forests also make it mandatory for local bodies and municipalities to treat waste through processes, including waste-to-energy technologies.

2.104. As regards, the role of IREDA in the promotion and development of the programme relating to Energy Recovery from Urban and Industrial Waste, the MNES in a written reply stated:-

“IREDA is playing a major role in the private sector development for the promotion of Urban and Industrial Waste Projects. IREDA considers financial assistance as per the financing norms given below :

Scheme	Interest Rate in %	Repayment period in years (including Moratorium)	Moratorium period in years	Minimum Promoter's contribution in %	Lending norms	Remarks
(a) Electricity through any technology						

Upto 3 MW	12.50	10	3	30	Upto 70% of total project cost	Loan is restricted to energy generation system excluding pre-fuel processing system. In case of (a) & (b), IREDA will limit to any one of these schemes
Above 3 MW & upto 6 MW	13.00	10	3	30	Upto 70% of total project cost	
(b) Solid Fuels (Pelletisation)						
Upto 250 TPD	12.50	10	2	30	Upto 70% of total project cost	

2.105. The details of the demonstration projects as furnished by the Ministry are:-

“Demonstration projects on waste-to-energy set up on cost sharing basis are as follows:

- i. Biomethanation plant for treatment of 0.4 mld sewage at Regional Research Laboratory, Bhubaneswar
- ii. High rate biomethanation plant for paper mill black liquor at M/s Satia Paper Mills, Muktsar, Punjab
- iii. Project for generation of 1 MW power from biogas generated from distillery wastes at Ugar Sugar Works, Belgaum, Karnataka
- iv. Project for biomethanation of tannery fleshings and sludge from tannery effluent treatment plant at
- v. Project for biomethanation of Slaughterhouse Waste at M/s Al Kabeer Ltd., Medak, Andhra Pradesh

2.106. A few other waste-to-energy projects taken up under demonstration programme are as follows:

- (a) 5 MW project for generation of power through biomethanation of Municipal Solid Wastes at Lucknow;
- (b) 1.2 MW project for generation of power through biomethanation of Poultry Droppings at Nammakkal, Tamil Nadu.
- (c) 0.5 MW project for tapioca processing wastewater at M/ Varalakshmi Starch, Nammakkal, Tamil Nadu.
- (d) 1 MW project for generation of power from cattle manure at Dairy Complex, Haebowal, Ludhiana.

- (e) 0.5 MW project for generation of power from slaughterhouse wastes at M/s Hind Agro-industries Ltd. Aligarh, Uttar Pradesh.
- (f) 30 kW project based on tannery wastes at Tata Exports Ltd, Dewas, Madhya Pradesh.

Successful completion of these projects is expected to have a catalytic effect on replication of similar projects in other parts of the country. This will also help in generation of confidence among all concerned as also in reducing the cost of such projects”.

2.107. During evidence a representative of the Ministry informed about the status of some of the Waste-to-Energy project as under:-

“.....the Delhi plant has definitely not worked at any time.....the Hyderabad plant, which was installed in December last, is already processing 700 metric tonnes of garbage of the city of Hyderabad, and after segregation, it is producing 210 tonnes of fuel pellets, which has the calorific value of about 3,500. That is the first success story from the municipal solid waste to produce energy in the form of pellets.....another project is coming up at Lucknow where 400 metric tonnes of the city garbage will be processed through bio-methanation route. That project will also be completed by March, 2003.....we have already one plant of 60 tonnes of slaughter house waste, producing 2,500 cubic metres of biogas. The plant is run by M/s. Al Kabeer, Hyderabad. Another plant is coming up for leather waste in Devas”.

2.108. As regards the level of private sector participation in the implementation of Urban and Industrial Waste programme, the Ministry replied as under:-

“Most of the waste-to-energy projects set up in the country so far are in the private sector only. The response of private sector in the implementation of waste-to-energy programme, though satisfactory, is being further encouraged by seeking their involvement in setting up demonstration projects with financial support of up to 50% of cost limited to Rs 3.00 crore per MW with a view to generate confidence among entrepreneurs and for establishing techno-economical viability of such projects”.

2.109. The bottlenecks which were noticed in the implementation of the programme and the steps taken to overcome them are mentioned as under:-

“Bottlenecks observed in the implementation of the programme are as follows:

- Lack of clear-cut policy guidelines of most of the state governments for encouraging setting up of waste-to-energy projects;
- Non-existence of many demonstration projects;
- High capital cost of waste-to-energy projects; and
- Lack of financial resources with the urban local bodies.

Some of the steps taken to overcome the above-mentioned bottlenecks are as follows:

- Ministry was instrumental in getting the use of various ‘waste-to-energy technologies’ included as an option for waste processing and management in the Rules for Municipal Solid Waste (Handling and Management) – 2000 notified by the Ministry of Environment and Forests.
- Ministry officials contributed a chapter on ‘waste-to-energy’ in the Manual for Municipal Solid Waste Management prepared by an Expert Committee constituted by the Ministry of Urban Development.
- With the persuasion of the Ministry, seven State Governments have already announced policy guidelines for encouraging such projects. The matter has again been taken up at the level of Chief Secretaries of other States for announcing similar policy guidelines. The matter of proper policy support is taken up with respective States during visits to various States.
- Ministry is promoting setting up of a few waste-to-energy projects as demonstration projects by providing 50% cost of projects limited to Rs 3.00 crore per Mega Watt.
- Efforts are being made to create a competitive market in the country by encouraging various technology providers and entrepreneurs to install waste-to-energy projects using various waste substrates from urban and industrial sectors.
- Efforts are also being made to develop indigenous technologies and also for improving upstream and downstream processes to suit Indian conditions.
- Financial support is also being provided to entrepreneurs for encouraging them to set up waste-to-energy projects in cooperation with urban local bodies on the basis of BOO, BOOT, BOLT, etc”.

2.110. The Committee have found that several waste-to-energy technologies have been developed and demonstrated, which not only help in reducing the quantity of wastes and generating heat or electricity, but also improve its quality for meeting the pollution control norms. This is the programme which concerns with improving the quality of life in the cities. There exist 17,00 MW potential of power from urban and industrial waste, However, only 17 MW has been harnessed so far. The Committee are distressed to note that the Ministry have never been successful in utilizing the allocated funds since the very inception of the programme. During 8th Five Year Plan, Ministry could utilize Rs.17.91 crore out of the allocated fund of Rs.20 crore. During 9th Five Year Plan, the situation has further worsened and the Ministry could utilize Rs.33.54 crore only, against the allocation of Rs.61 crore. As a result, the Ministry could not achieve their physical targets during these years In the opinion of the Committee all these are happening due to slackness on the part of the Ministry. The Committee desire that the Ministry of Non-Conventional Energy Sources should come out with a long-term Perspective Plan so that the funds allocated could be utilized fully. The Committee also desire that the States should be motivated to undertake projects on recovery of energy from wastes in a big way.

2.110.a It has been brought to the notice of the Committee that in waste-to-energy programme hardly any emphasis is given to realize energy from Urban and Industrial waste. The Committee are of the view that since Agriculture and Urban and Industrial waste, form component of the programme, Urban and Industrial waste also deserve better attention. The Committee, therefore, recommend that Government should focus their attention towards realization of power from Urban and Industrial waste. The Committee would like to be apprised of the action taken by the Government in this regard.

2.111. In the opinion of the Committee lack of demonstration projects is one of the missing links in the promotion of this programme. The Committee desire that “Demonstration Projects” may be taken up with a view to instilling confidence, gaining experience and creating awareness amongst project promoters, financial institutions, Government organizations / Departments, etc. There is a need to attend to high capital cost of waste to energy projects and also to the problem of lack of financial resources with urban local bodies. The Committee would like to be apprised of the action taken by the Government on these matters.

2.112. The Committee find that the major impediments in the implementation of the programme is the lack of clear-cut policy guidelines in most of the States in regard allotment of land on long-term basis at nominal lease rent, supply of garbage free of cost at project site and facilities for evacuation, purchase and sale of power generated from waste-to-energy projects for encouraging the setting up of waste-to-energy projects. The Committee further find that only 7 States have declared their policy guidelines for encouraging such projects. The Committee would like to emphasise that remaining State Governments should be persuaded to declare their respective policy guidelines to promote the programmes. The Committee further find that even amongst the 7 States, there are no uniformity in the policy guidelines issued by them. While 3 States, namely Uttar Pradesh, Maharashtra and the Punjab have announced policies for supply of wastes at project site free of cost, the State of Tamil Nadu has declared a policy for providing wastes free of cost at the dump sites. In the opinion of the Committee, a uniform policy should be adopted for providing wastes free of cost at the project sites. Accordingly, the Committee recommend that garbage should be supplied free of cost at the project site.

2.113. The Committee find that financial incentives offered under the programme, are not attractive enough to enthuse the confidence of a promoter. The Committee desire that the interest subsidy should be increased in the interest of the programme. Simultaneously, State / Central Government should announce a Tax Holiday and reduction in Central / State Taxes, etc. on the lines of Biomass Power Generation for the benefit of the promoters.

NEW DELHI;
April , 2002

Chaitra , 1924 (Saka)

SONTOSH MOHAN DEV,
Chairman,

Standing Committee on Energy.

**PART II
APPENDIX**

**STATEMENT SHOWING THE DEMANDS FOR GRANTS OF THE MINISTRY
OF NON-CONVENTIONAL ENERGY SOURCES**

(Demand No.61)

(Rs. in crore)

(Vide Para 1.10 of the Report)

Revenue Capital Total
499.47 130.05 629.52

Sl. No.	Major Head	Programme Scheme	Revenue Section								Remarks
			2000-2001		2001-2002		2002-2003				
			Actual		BE		RE		BE		
			Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan	Plan	Non-Plan	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	3451	Secretariat Economic Services	4.13	4.84	5.35	5.32	5.35	5.19	6.00	5.27	This Head comprises Domestic & Foreign Office Expenses, Re Publications, Other Expenses, Advertisement Professional Services Additional Sources of Offices.
2.	2501	Special Programmes for Rural Development	0.13	-	0.75	-	0.75	-	0.22	-	This Programme Programme, Grants- & Regional Training
3.	2810	Non-Conventional Sources of Energy	186.90	-	373.99	-	285.44	-	458.07	-	This Head comprises Conventional Energy, assistance Programme, National Biogas. Energy from Waste, Energy from Small Hydro Power Promotion Program Hilly Hydro Projects of Energy, Alternative Transportation, H Ocean Energy, National Renewable Energy Demonstration Project States / State Nodal SDC Grants to Provision for North including Sikkim, Union Support Programme Entrepreneurship Development, Commercialisation Electrification Program Renewable Energy National Project Services for Rural Management System

4.	3601	Grants-in-aid to State Government	35.27	-	29.95	-	28.17	-	23.77	-	Publicity Program Cooperation. This Head includes State Governments Power Programme Grants for Centrally Schemes for Bio-Energy Advertising & Public Institutional Biogas Biomass Briquetting Biomass Gasifier Application, National Board, Biomass Combustion, Grid Connected Animal Energy Efficient Passive Architecture Technical Back-up Programme, Solar Energy active Research with Organisations, Prom SPV Pump Programme Power Generation, ASPV Power Project ISCC project, assistance Generation Programme Wind Pump Programme Centre, Wind Resource National Programme Choolah, Woman Energy Development Urban and Agriculture Programme for Bio-Community and Energy Development, Solar Improved Chulhas, & Agriculture Waste Energy Planning Monitoring, Lumps North-Eastern States Village Electrification Women and Rural Development, National Energy Services for This Head includes Plan Schemes for W Grants for Centrally Scheme for NPBD Institutional Biogas Thermal Energy Programme on Integrated Rural Energy Monitoring, National Energy services for
5.	3602	Grants-in-aid to Union Territory Government	3.11	-	4.76	-	6.66	-	6.14	-	This Head includes Plan Schemes for W Grants for Centrally Scheme for NPBD Institutional Biogas Thermal Energy Programme on Integrated Rural Energy Monitoring, National Energy services for
6.	-	Total Revenue	229.56	4.84	414.80	5.32	326.37	5.19	494.20	5.27	-
7.	4810	Capital Outlay on Non-Conventional Sources of Energy	27.05	-	27.05	-	27.15	-	35.05	-	This Head includes for minor works in Centre and invest Renewable Energy Agencies Ltd. (IRE
8.	6810	Loans for Non-Conventional Sources of Energy	84.50	-	140.40	-	140.40	-	95.00	-	This Head includes c REDA for the Internat association (IDA) an

9.	-	Total Capital	111.55	-	167.45	-	167.55	-	130.05	-
10.	-	Total (Gross)	341.11	-	582.25	5.32	493.92	5.19	624.25	5.27