15

STANDING COMMITTEE ON ENERGY (1996-97)

ELEVENTH LOK SABHA

MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES

DEMANDS FOR GRANTS (1997-98)

FIFTEENTH REPORT

सत्यमेव जयते

LOK SABHA SECRETARIAT
NEW DELHI

April, 1997/Vaisakha, 1919 (Saka)

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

LOK SABHA SECRETARIAT
NEW DELHI

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2. Shri G.R. Juneja — *Deputy Secretary*
3. Shri A.S. Chera — *Under Secretary*
4. Shri Arun Kumar — *Reporting Officer*

INTRODUCTION

I, the Chairman, Standing Committee on Energy having been authorised by the Committee to present the Report on their behalf, present this Fifteenth Report on the Demands for Grants (1997-98) 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 8th April, 1997.

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 19th April, 1997.

NEW DELHI;
April 25, 1997
Vaisakha 5, 1919 *(Saka)*

JAGMOHAN,
Chairman,
Standing Committee on Energy.

PART I

REPORT

ANALYSIS OF DEMANDS FOR GRANTS OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES

The Ministry of Non-Conventional Energy Sources have presented Demands for Grants of Rs. 341.88 crore for the year 1997-98 as against Rs. 246.69 crore (actual) in 1995-96 and Rs. 335.90 crore (BE) in 1996-97. The details regarding the Demands for Grants are shown in Appendix-I. The total budget allocation for the last three years has been as under:—

(In crore of Rs.)

Actual 1995-96	B.E. 1996-97	R.E. 1996-97	B.E. 1997-98
246.69	335.90	284.82	341.88

The plan outlay of the Ministry for 1997-98 is Rs. 339.13 crore.

I. Integrated Rural Energy Programme (IREP)

1.2 The Integrated Rural Energy Programme was developed and implemented in the Sixth Plan on a pilot scale in selected States. It was launched as a regular programme during the Seventh Plan period and also continued during the Eighth Plan period. However, IREP was transferred from Planning Commission to MNES on 1st April, 1994.

1.3 The Integrated Rural Energy Programme aims at providing the optimal mix of all types of energy to rural areas for meeting energy needs for subsistence and productive activities through the preparation and implementation of block level integrated rural energy plans and projects.

1.4 The approved outlay for IREP in the Eighth Plan was Rs. 85 crore. Against this, the total expenditure was Rs. 37.7 crore. Rs. 300

crore has been proposed during the Ninth Plan period for IREP. It is proposed to extend the programme to 1410 blocks during the Ninth Plan period by adding about 150 blocks per year. In the year 1996-97, against the proposed allocation of Rs. 32 crore and Budgetary Estimate of Rs. 15.85 crore, Revised Estimate of only Rs. 4 crore was provided.

1.5 Asked to explain the reasons for curtailing the approved plan outlay for IREP during the course of Eighth Plan period, the Ministry, in their written reply, informed that funds were allocated for this programme during Annual Plans, depending upon availability of resources by Planning Commission in 1992-93, 1993-94 and 1994-95. After the programme was transferred to MNES on 1.4.1994, the Ministry allocated the resources for the year 1995-96 and 1996-97. The expenditure in 1992-93, 1993-94 and 1994-95 based on funds provided by Planning Commission were Rs. 6.70 crore, R. 7.30 crore and Rs. 5.60 crore, respectively. In 1995-96, the Budget proposal for IREP was Rs. 22 crore against which a Budget allocation of Rs. 10 crore was made at the BE stage which was enhanced Rs. 12 crore at the RE stage. Similarly, against a Budget proposal for 1996-97 of Rs. 32 crore a BE of only Rs. 15.85 crore was provided. The Revised Estimate for 1996-97 was Rs. 4 crore and the actual expenditure based on re-appropriation is likely to be Rs. 6.11 crore. Thus, the total expenditure for IREP in the Eighth Plan, was Rs. 37.7 crore, against the allocation of Rs. 85 crore.

1.6 The Integrated Rural Energy Programme was supposed to be expanded at the rate of at least 100 blocks per year in the Eighth Plan *i.e.* 500 blocks in the Eighth Plan period. But the actual achievements would only be 408 blocks. Additional 100 blocks in the year 1996-97 have also not been sanctioned. Keeping in view the above scenario, there has been a significant decline in the activities of the programme in the year 1996-97.

1.7 It was stated by the Ministry, in their written reply that the "Commission for Additional Sources of Energy (CASE) had decided that IREP should be evaluated by NCAER and ORG and the findings of both reports should be considered by CASE before expanding the programme in 1996-97".

1.8 To a query whether the programme has been temporarily shelved, the MNES informed in a written note that during 1996-97 the

target of 100 additional blocks were not taken up by the Ministry pending the finalisation of the Second Evaluation Report *i.e.* from ORG.

1.9 The Committee are surprised to note that the programme to extend IREP to 100 more blocks during 1996-97 could not be taken up pending an evaluation of the programme by National Council of Applied Economic & Research (NCAER) and Operations Research Group (ORG). Though the NCAER Report appears to have been submitted, the ORG report on the programme is reportedly awaited. The Committee fail to understand as to why the programme had to be stopped and the funds curtailed merely on the ground that a particular evaluation report by ORG has not been received especially as the programme is continuing as a Plan scheme. Moreover, NCAER evaluation report has reportedly given a strong recommendation for strengthening and continuing the programme. The Committee strongly feel that the programme should not have been discontinued/ temporarily shelved merely due to non-receipt of the evaluation report by an independent agency.

1.10 The Committee note with serious concern that the outlay for an important rural programme like IREP during the last three years of the plan has been drastically cut down. The trend in allocation of funds to IREP has been hopelessly poor, which obviously constrains the implementation of the programme. The fund allocation for IREP over the Eighth Plan period has been too small. Less than 50% of the funds earmarked for IREP during the Eighth Plan period were actually made available to the Ministry. The Committee are of the firm view that so long as allocation remains at present level, IREP will be viewed in terms of playing a marginal role. The Committee feel that there is a need for adoption of an integrated approach to propagate IREP with rural development programme. The Committee stress that there is a strong case for correcting the imbalance in budget allocation for IREP and accordingly recommend that a beginning in this direction should be made by allocating additional funds needed by the Ministry for implementing the IREP in the Ninth Plan Period.

II. Renewable Energy Parks (REPs)

1.11 Under the "Special Area Demonstration Programme", a new scheme of "Renewable Energy Parks" (REPs) was launched during

1994-95. Under this scheme, REPs are set up in educational institutions and at institutions where there is a large inflow of the public, with a view to create awareness and give publicity amongst students and teachers and rural and urban citizens, about the use and benefits of renewable energy systems and devices. The REPs projects are given to organisations/institutions who have sufficient experience in the field of renewable energy and have infrastructure facilities to establish such an Energy Park and operate and maintain it. The full responsibility of procurement, installation, operation and maintenance of the renewable energy systems deployed is of the organisation/institution setting up the REP. A maximum number of 10 REPs are allowed for each State. So far, 86 REPs have been sanctioned in 18 States/UTs.

1.12 Asked whether the sanctioned REPs (86) have became operational, the Ministry in their written reply stated that four institutions have completed the installation of various systems and devices sanctioned to them. The installation of the systems and devices in the remaining 82 Renewable Energy Parks (REPs) are in progress. The duration for the execution of the REP projects is one year. Most of the REPs (74) were sanctioned in March, 1996. 8 REPs were sanctioned in July, 1996. All these REPs are likely to be operational shortly.

1.13 The physical targets, achievements, Budget Estimates, Revised Estimates and Actual Expenditure in regard to Renewable Energy Parks during 1995-96, 1996-97 and 1997-98 are given below:—

	(Nos.)		(Rs. in crore)		
Year	Target	Achievement	B.E.	R.E.	Actual Expenditure
1995-96	70	74	5.00	3.00	1.48
1996-97	72	8	3.00	1.00	0.16
1997-98	80	—	1.00	—	—

1.14 It has been stated that the scheme of Renewable Energy Parks (REPs) formulated under the Special Area Demonstration Project (SADP), was modified at first, in October, 1995 and fresh guidelines were issued in November, 1995. Due to this, a sufficient number of project proposals could not be submitted by the State Nodal Agencies

during 1995-96. Also, no new REPs were taken up during 1996-97 because the scheme was being reviewed by an Expert Group on Renewable Energy Parks set up by Secretary, MNES to assess the status of REP projects and prepare a Manual on REPs. As informed by the Ministry in a written note, a modified scheme would be taken up in 1997-98 after receiving the suggestions/recommendations of the Committee.

1.15 To a query why the Revised Estimate for REPs was not being spent, the Secretary, MNES stated:—

> "About the Renewable Energy Parks the position is that the programme started only in November, 1995. So, we had barely four months or so of 1995-96. You will see that against our target of 70 Parks. We have achieved, in the sense of money release, corresponding to 74 parks. We had budgeted an estimate of Rs. 3 crore and we released an amount of approximately Rs. 1.5 crore.... In 1996-97 we reviewed the matter and we found that while hardware had been done, none of the software had been done. That is, there were no manuals, there were no experiment workbooks, there were no posters, there were no audio-visual courses..... So, what we have done is, we have not released any significantly more money and that is why it is Rs. 0.16 crore release in 1996-97 for Renewable Energy Parks. It is not because we tried to do it and failed. We did not do it deliberatively and consciously because we have set up a Committee of leading experts and educationists to review & strengthen the scheme to provide the entire software support for these 86 parks in 86 institutions..... It is not a matter of spendability. It is a matter of review & effective structure & management of the Parks. You will notice that in 1997-98 we have only provided Rs. 1 crore because much of the equipment money was already released in 1995-96 and some procurements were made. It is a matter of reviewing this programme, seeing that it becomes viable, a living, well-supported, well-run scheme and not just a bunch of equipment and hardware which nobody cares about and in two years from now is all rusted and gone to pieces. This was a conscious decision of the Ministry".

1.16 The Committee observe that the scheme of Renewable Energy Parks launched under the Special Area Demonstration Programme would go a long way in creating awareness among the general public as well as students and teachers about the benefits of

Renewable Energy Systems and devices. Though, a beginning has been made for setting up of Renewable Energy Parks during 1995-96, release of funds for the programme has been slowed down for a review of the programme by an Expert Group. The Committee trust that the review work would be completed expeditiously and necessary measures be taken for making the programme more effective. The Committee also hope that appropriate measures would be taken to ensure that the Renewable Energy Parks once set up would be maintained properly in the long run.

III. Solar Photovoltaics Pump Programme

1.17 An important component of rural electrification is the energisation of agricultural pumpsets. During 1993-94, MNES launched a new programme for deployment of Solar Photovoltaic Water Pumping Systems for agriculture and related uses with a modest target of 1000 pumps for each remaining year of the Eighth Plan. The programme is implemented through IREDA with a subsidy and soft loan arrangement. The total outlay for this activity over the last 4 years of the Eighth Plan is Rs. 90 crore. The target, achievement and outlay for the last four years are given below:—

(Rs. in crore)

Year	Target	(No. of SPV Pumps) Achievement	Outlay	Actual Expenditure
1993-94	1000	106	28.00	27.20
1994-95	Programme approved in 1993-94 was continued with a target of 1000 pumps	499	28.00	6.90
1995-96	1000	738	13.00	13.00
1996-97	1000	492	10.25	10.02 (upto 6/3/97)
	3,000	1835	79.25	57.12

1.18 The target fixed for 1997-98 is 1000 SPV Water Pumping Systems with a Budget Estimate of Rs. 13.00 crore.

1.19 The Committee observed that there is steep shortfall in achieving the targets as well as utilisation of the approved outlays during the last four years for SPV Pump programme. With regard to reasons for the shortfalls, the MNES informed in their written reply that this programme envisaged direct marketing of SPV Water Pumping Systems for agriculture and related uses by the participating SPV manufacturers. Giving the reasons for the slow progress of the programme, the Ministry informed that, "(i) SPV water pumping being a new concept, farmers were reluctant to purchase them; (ii) the initial cost of the system is relatively high; (iii) the participating manufacturers and financial intermediaries have very little experience of direct marketing of agricultural products. It took some time for IREDA to organise the scheme and empanel manufacturers and intermediaries".

1.20 Enquired about the initial cost of SPV Water Pumps, the MNES in their written reply, stated that during 1996-97 the initial cost of a SPV Water Pump with a 900 watt PV array was about Rs. 2,05,000—Rs. 2,35,000 per system. This was based on a PV module cost of Rs. 185 per watt—Rs. 195 per watt.

1.21 Regarding the efforts made by the Ministry to reduce the initial cost of SPV Water Pumps, the MNES has informed that during 1993-94, when the new programme on SPV Water Pumps was introduced, the average cost of PV modules was Rs. 225 per watt, which gradually reduced to Rs. 165 per watt in 1995-96. This reduction in cost of PV modules was possible due to (i) enhanced volumes of production of PV modules and systems including water pumping systems; (ii) reduction in the customs duty on inputs required in manufacture of PV cells and modules; (iii) improvements in the overall performance of the modules and systems; and (iv) enlarged programmes of the Ministry. The cost of modules increased during 1996-97 due to increase in the international prices of silicon wafers, the basic raw material for making solar cells.

1.22 The high initial cost is the main reason for slow performance of SPV Water Pump Programme. The production cost of solar modules/cells is essentially dominated by silicon wafer which is a major and expensive input material. The Committee have been informed that efforts are on to improve the overall performance of solar cells/modules. With improvements in the efficiency of solar modules/cells and increase in production volumes, costs are expected to come down to Rs. 110 per watt in the Ninth Plan period from Rs. 165 per watt in 1995-96. The Committee recommend that efforts should be made to expand the use of solar modules/cells to spurt the demand which would break the low production—high cost–cycle and bring about cost reduction. The Committee stress that it is better to involve voluntary organisations in identification of beneficiaries, their training for operation and maintenance and also after sales service for successful utilisation of the systems. The Committee desire that awareness programmes through electronic media, highlighting the advantages of using solar PV pumping systems are necessary.

IV. Wind Pumps & Aerogenerator/Hybrid Systems

1.23 The programme on Wind Pumps and Aerogenerators/Hybrid Systems has two components:—

(a) Water Pumping Windmills

(b) Small aerogenerator & hybrid system

1.24 Small capacity hybrid systems based on aerogenerators and water pumping windmills have the potential to harness the vast wind energy resource of the country for supply of electricity and for water pumping, especially in rural and remote areas of the country. The aerogenerators can be used more effectively as hybrid system with other energy sources like solar photovoltaic, biomass and diesel. The programme on wind/hybrid energy systems is aimed at promoting the development of technologies for harnessing the wind energy potential along with other energy sources for power generation and wind pump-based water pumping.

1.25 The targets, achievements, annual outlay and expenditure in respect of Water Pumping Windmills and Small Aerogenerator & hybrid

system during the Eighth Plan period are given below :—

System	Year	Target (Nos/kw)	Achievement (Nos/kw)	Outlay (Rs. in lakhs)	Expenditure
WPWM	1992-93	500	93	No. sperate outlay	
SAS		—	4		
WPWM	1993-94	300	20	95.00	30.00
SAS		20	—		
WPWM	1994-95	200	56	75.00	79.00
SAS		30	—		
WPWM	1995-96	200	90	75.00	53.60
SAS		35	1		
WPWM	1996-97	100	88	75.00	24.2
SAS		25	14		
WPWM	1997-98	200	—	100.00	
SAS		40	—		—

WPWM = Water Pumping Windmills.
SAS = Small Aerogenerator System

1.26 It has been stated by MNES in their written note that the main reasons for shorfall in achieving the targets are, longer lead time taken by the manufacturers, difficult site logistics and related delays in taking up installation work. In case of aerogenerators, difficulties were faced in identifying suitable foreign manufacturers for supply of blades due to small quantities of import and related cost and delays in indigenous manufacture of systems.

1.27 It has been stated that an evaluation of water pumping wind mills by Tata Energy Research Institute (TERI) concluded recently, in which certain design modifications have been suggested.

1.28 To a query whether any efforts have been made to promote indigenous manufacture of blades, the MNES stated in a written reply that the development of small aerogenerator systems including the

development of blades suitable for small aerogenerator systems are supported at the Central Power Research Institute (CPRI), Trivandrum. In addition, one of the manufacturers of the small aerogenerator systems has also indentified an indigenous source of blades. These blades are under evaluation.

1.29 Asked about the steps proposed to overcome delays in manufacture of windmills and their installation, the MNES informed in a written reply that, at present, the manufacture of water pumping windmills is primarily in the small scale sector, where the manufacturers have limited infrastructure and production capacity. This leads to longer lead times in manufacture and supply of windmills. However, enhanced volumes of production are likely in the 9th Plan and thus are expected to reduce this problem.

1.30 The Committee are not happy with the performance of Water Pumping Windmills and Small Aerogenerator Systems which suffered a severe set back in terms of achieving targets. The Committee suggest that guidelines should be evolved by the MNES for site selection, suitable arrangements for installation, commissioning and after sales service. The Committee stress that information brochures provided by the manufacturers should be standardised to include all relevant information. Publicity material on windmills should be developed to create awareness amongst the people. The Committee strongly feel the need for strengthening and intensification of R & D efforts to improve the design and efficiency of water pumping windmills, aerogenerators and hybrid systems and also to make them cost effective. Further, it is essential to undertake measures for development of performance standards and establishment of independent test facilities for water pumping windmills, aerogenerators and hybrid systems.

V. Small Hydro Power Programme

1.31 It is observed from the Performance Budget of the Ministry (1996-97) that the Eighth Plan goal in respect of Small Hydro Projects (SHP) was to take up 200 MW of SHP projects which also included private sector efforts.

1.32 On the question whether the targets in respect of SHP projects set for the Eighth Plan pertain to the capacity of SHP projects to be sanctioned during the plan period or, whether, the targets relate to the

capacity of SHP projects to be actually commissioned during the plan period, the MNES stated in their written reply that the targets for the SHP Programme pertain to sanction of projects in view of their long gestation, and uncertainties about their timely implementation by the State Governments and agencies.

1.33 With regard to the total capacity of SHP projects presently operating in the country, the MNES informed in a note that a total capacity of 144.28 of SHP projects upto 3 MW station capacity has been commissioned so far.

1.34 Asked about the actual capacity of SHP Projects commissioned during the Eighth Plan period, the MNES in their written reply stated that a capacity of 51.28 MW has been commissioned during the 8th Plan period. In addition, 12 MW of projects financed by IREDA had also been commissioned during the Plan period.

1.35 Enquired about the likely/estimated time of completion/ commissioning of the SHP projects sanctioned during the 8th Plan period, the MNES informed in a note that the bulk of the projects sanctioned during the 8th Plan period are likely to get commissioned during the first two years of the 9th Plan. The commissioning of a few projects in difficult and remote areas may however, spill over to the third year of the plan period.

1.36 To a query whether the cost estimate and time schedule of completion of projects are clearly specified at the stage of project sanction, the MNES stated that the projects are sanctioned based on the overall techno-economic viability taking into consideration the cost estimates and time frame required for their implementation. These are clearly specified in the sanctions issued by the Ministry as well as by IREDA.

1.37 Regarding achievement of Small Hydro sector, a representative of MNES stated during evidence:

> "As far as small hydro is concerned, we had a target of 200 MW in the Eighth Plan. Against that target, our achievement by way of projects completed is 63 MW and projects initiated is 253 MW. When we set targets, for instance biomass power or small hydro power, normally, they are in terms of initiating the project. It is because the gestation period in these projects in quite high. Sir, by

and large, these have been executed in the State sector. As you know, the priority that the SEBs attach to small hydro is very low. Generally, the progress is very poor. We initiated 253 MW as against the target of 200 MW for 8th Plan. We have completed 63 MW. We are expecting the rest to spill over into the Ninth Plan. Sir, 253 MW will be completed during the first three years of the Plan. Sir, by and large, small hydro is a very difficult sector, particularly, in the hilly and North-Eastern States. The SEBs are not very tuned to dealing with this. Neither do they have inclination to go in for small scale sector.....".

1.38 The Committee are of the view that the potential of small Hydro Power is immense in the country. Though, the projects to an extent of 253 MW capacity has been sanctioned during the Eighth Plan period, the projects actually commissioned during the plan amount to only 63 MW. The Committee are of the view that targets for Small Hydro Power Projects should not merely pertain to the capacity to be sanctioned but also include targets for commissioning. Considering the slow progress of the projects, the Committee urge that steps should be taken to ensure the timely implementation of the projects. The Government should take the initiative in ensuring the progress of the projects in consultation with the States. Efforts should be made to overcome the bottlenecks in the implementation of the projects in consultation with the State Governments on the issues involved.

VI. Urban & Industrial Waste

1.39 The Committee note that there is shortfall in utilisation of Eighth Plan outlay in respect of Urban & Industrial Waste. It has been stated that the 8th Plan outlay of Rs. 20 crore was for energy recovery from Urban, Municipal & Industrial Wastes including Government contribution to the UNDP/GEF-assisted project on "High Rate Biomethanation Processes" and Biomass based Power/Co-generation systems. Against the initially approved 8th plan outlay of Rs. 20 crore, an expenditure of Rs. 7.73 crore has been incurred on the programme for recovery of energy from urban, municipal & industrial wastes and an expenditure of Rs. 10.18 crore has been incurred on the Biomass based Power/Co-generation programme. Thus, against the combined outlay of Rs. 20 crore, on both programmes, an expenditure of Rs. 17.91 crore has been incurred during the 8th Plan.

1.40 It has been further stated that during the initial evolutionary stage of the programme for energy recovery from Urban, Municipal & Industrial Wastes, there was not much expenditure as efforts were mainly concentrated on creation of awareness and formulation of the programme itself through a series of interactive/business meets with the State Governments, State Nodal Agencies, Urban Local Bodies, Industries, Financial Institutions, Project Developers, investors and other players in this sector.

1.41 To a query on the progress of Urban and Industrial Waste Programme, the Secretary MNES stated that:

> "On energy from urban waste, I think, three years of hard work by our Ministry is now paying off. We are today progressing something like 34 projects involving nearly 90 megawatts of electrical generating capacity. This involves municipal solid waste, sewage and industrial waste. The various proposals are at different stages. We have just recently finalised two projects in Kanpur with Eight Megawatts and at Lucknow with Four Megawatts. Agreements have been signed; money is to be released".

1.42 Enquired about the latest position of Incineration-cum-power generation plant at Delhi, the Secretary, MNES stated during evidence:

> "It is now four years or a little over that since the plant was shutdown. Now we have two private companies who are interested to take over and run the plant using the garbage provided by the Municipal Corporation. The Companies are prepared to put in the additional seggregation equipment. The problem was of seggregation of the municipal solid waste and of calorific value of garbage, on the other. Technical assessment has also been done. I think, we are now in a position to negotiate with both these parties and get one selected. They will put in whatever additional capital investment is required for laying outs/drying the waste, before it goes to the boiler. This will generate approximately two to three megawatts of electricity and we will be requesting the DESU to buy that at the normal rate for power for non-conventional energy of Rs. 2.25 per unit. It is the rate at which renewable energy is bought by the States across the country. With the high tension tariff of Rs. 3.00 or more being charged from industry and at the domestic level, the price of Rs. 2.25 is a good one for the DESU, to buy power from the Timarpur Plant".

1.43 On a question of whether the technology that was adopted for Incineration-cum-power generation plant, Delhi, was suitable, the Secretary, MNES stated:

"The experience with Timarpur was something where somebody gave the plant from a different environment with a different type of waste which was not matching with the waste that we have in the project. The detailed analysis is being done of the waste that is being dumped, where that solid waste is being deployed, what is its precise composition, its calorific value, and the consistency of the material over time. We have had consultants to do all this analysis and prepare a project report based on training. All these projects are mostly done in the private sector by private testing. The responsibility of the municipality, whether in Delhi or Kanpur or Lucknow or elsewhere, is to provide the waste and to provide the land for the plant. The projects/plants are being financed through IREDA commercially and with additional price support from the Ministry. The full DPRs have been prepared for these projects including their financial and technical viability. Consultants have been engaged. We also have some foreign consultants in some of the areas of energy from urban and industrial waste depending on the type of technology appropriate for a particular type of waste. Generally, we are talking about the anaerobic digestion technique of various types, but the technology is also changing. Some of the projects are based on domestic technology developed by the National Environmental Engineering Research Institute of CSIR at Nagpur. Some of projects are based on foreign technology. This is an effective way to evaluate the characteristics of waste and consultants are using these materials for preparing the project report. All these projects are extremely site specific as we need to ensure that the characteristics of the waste match the plant. In some cases we are using incineration in many cases we are using anaerobic digestion method. So there are variant technologies available. Most of the raw materials are being analysed by consultants rather than by us. We have a committee of people from all agencies who are knowledgeable on energy from urban & industrial waste."

1.44 Asked about the import content of the technology for urban waste, the Secretary, MNES stated:

> "As far as I know, in the area of energy from municipal solid waste, it is very small. We may use some foreign consultants to check out our DPRs or give us an opinion on such reports. The process equipment and engineering is indigenous. There are other projects like energy from vegetable market waste where the Dutch or the Austrians have good technologies which we are drawing on. However, our vegetable market wastes have been analysed. They have been found to be very different from the Dutch vegetable market waste or the Austrian vegetable market waste. So, even where we have foreign consultants, we have got experienced Indian consultants to work with them both to absorb the foreign technology and to match the technology & plant to the characteristics of our waste and so that we do not have to keep buying the foreign technology every time..... I can say with some reasonable degree of confidence that we have learnt a lot of lessons from Timarpur. It is upper most in the minds of all my colleagues. We have to be vigilant to see that each energy from urban & industrial waste project is properly done. We are determined not to rush through with the projects. It is better to do 30 Megawatts well rather than trying to hit 90 Megawatts and then getting into problems....."

1.45 The Committee note that the total Eighth Plan expenditure on programmes relating to energy recovery from urban and municipal waste was short of the budgeted plan outlay by about Rs. 2.10 crores. Though, the Ministry has informed that significant progress in tapping of energy form waste is now expected, considering the experience of some "energy recovery plants" commissioned in the past, the Committee feel that the need for proper and timely appraisal of the technological aspects of the plants to ensure their successful operation. The Committee also like to be informed of the progress in this field.

VII. Alternate Fuels for Surface Transport

1.46 Against an Eighth Plan target of Rs. 10.00 crore, the Revised Estimate was Rs. 8.88 crore, with the corresponding achievement in the Alternate Fuels for Surface Transportation Programme being Rs. 4.41 crore.

1.47 Enquired about the shortfall in the utilisation of the Eighth Plan outlay, the MNES informed that the shortfall in the utilisation of the Eighth Plan outlay for the Alternate Fuels for Surface Transportation Programme was due to the fact that the technology for Battery Operated Vehicles (BOVs) and Alcohol Operated Vehicles (AOVs) is still in the development stage and considerable amount of Research and Development work needs to be done before both these type of vehicles, and their technology, is commercialised.

1.48 The Committee are of the view that Battery Operated Vehicles as well as vehicles run on other alternate fuels, such as alcohol, are environmentally benign, and have been fairly successful in certain areas. The Committee, therefore, emphasises the need for strengthening the R & D efforts in this area. The Government should consider introduction of vehicles run on alternate fuels in small towns on a limited scale for the purposes of local transport.

1.49 The Committee express the need for an added emphasis on development of renewable energy sources which are not only viable, cost effective and eco-friendly but also available in abundance. Development of renewables would not only reduce our dependance on finite fossil fuels but also extend the life span of such fossil fuels on which we have become excessively dependant for meeting our energy requirements. The Committee feel that sincere efforts need to be made to tap the immense potential of hydel, solar and wind energy so as to ensure a significant contribution from these sources for meeting our energy needs.

NEW DELHI;
April 25, 1997
Vaisakha 5, 1919 (Saka)

JAGMOHAN,
Chairman,
Standing Committee on Energy.

APPENDIX-I

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

(In crore of rupees)

Sl. No.	Major Heads	Programme/ Schemes	Revenue Section								Remark
			1995-96 Actual		1996-97 B.E.		1996-97 R.E.		1997-98 B.E.		
			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	2.08	2.58	2.65	2.90	2.65	3.20	3.08	2.75	This Head comprise Salaries, Wages, O.T.A, Domestic & Foreign Travel Expenses, Office Expenses, Rent & taxes, Publication, Other Administrative Expenses, Advertising and Publicity, Professional Services, Commission for Additional Energy Sources, Regional Offices.

1	2	3	4	5	6	7	8	9	10	11	12
2.	2501	Special Programmes for Rural Development	1.29	—	5.35	—	0.50	—	4.30	—	This Programme includes IREP Programme, Grant-in-aid for National & Regional Training Centre.
3.	2810	Non-Conventional Sources of Energy	118.86	—	165.87	—	135.44	—	176.36	—	This Head comprises R & D in Non-Conventional Energy Sources, Bio-energy, Assistance to Biogas Programme, National Programme for Biogas Development, Community and Institutional Biogas Development, Biogas, Energy Plantation, Biomass, Biomass Gasifier for Stand Alone Application, National Bio-Energy Board, Biomass Co-generation and Combustion, Grid Connected Gasifier, Animal Energy Programme, Solar Passive Architecture, Regional Technical Back-up Units & Training Programme, Solar Energy Centre, Institutions/ Interative Research with other Organisations. Professional

1	2	3	4	5	6	7	8	9	10	11	12
											Service, Photovoltaic, SPV Pump Programme, Solar Thermal Power Generation, Grid connected SPV Power Project, Assistance to Wind Power Programme, Wind Energy Centre, Wind Resource Assistant, National Programme on Improved Choolah, Energy from Urban and Agricultural Waste, Energy from Industrial Waste, Small Hydro Power Development, SHP Programme UNDP/GEF Hilly Hydro Projects, Chemical Sources of Energy, Alternative Fuel for Surface Transportation, Hydrogen Energy, Geothermal Energy, Ocean Energy, Urjagram Project, Special Area Demonstration Project, Energy Conservation, TIFAC/Data Managemen System, Information and Publicity Programme, International Cooperation.

1	2	3	4	5	6	7	8	9	10	11	12
4.	3601	Grants-in-aid to State Government	44.08	—	43.20	—	27.60	—	44.04	—	This head includes Grants-in-aid to State Governments for Small, Hydro Power Programme, Wind Energy, Grants for Centrally Sponsored Plan Schemes for Bio-Energy National Programme for Biogas Development, Community and Institutional Biogas Development, Solar, Solar Thermal Energy Programme, National Programme on Improved Choolah, Energy from Urban & Agriculture Waste Integrates Rural Energy Planning Programme-Monitoring.
5.	3602	Grants-in-aid to Union Territory Govt.	0.49	—	0.61	—	0.11	—	0.62	—	This Head includes Grants for Central Plan Scheme for Wind Demonstration, Grants for Centrally Sponsored Plan Scheme for NPBD, Community and Institutional Biogas Development, Solar Thermal Energy Programme, National Programme on Improved

1	2	3	4	5	6	7	8	9	10	11	12
											Choolah, Integrated Rural Energy Planning-Programme Monitoring.
Total Revenue Section			168.57	2.58	217.68	2.90	166.38	3.20	224.40	2.75	
Capital Outlay											
6.	4810	Capital Outlay on Non-conventional Sources of Energy	24.05	—	28.08	—	28.08	—	34.60	—	This Head includes capital investment for minor works in the Solar Energy Centre and investment in the Equity of Indias Renewable Energy Agency Ltd. (IREDA).
7.	6810	Loans for Non-conventional Sources of Energy	51.49	—	87.24	—	87.24	—	80.13	—	This Head includes counter-part loan to IREDA for the International Development Association (IDA) and Danish Export Finance Corporation (DFC) components of credit under the India Renewable Resources Development Project of the Ministry implemented through IREDA.
Total Capital Section			75.54	—	115.32	—	115.32	—	114.32	—	
Total			244.11	2.58	333.00	2.90	281.62	3.20	339.13	2.75	

APPENDIX II

Statement of Conclusions/Recommendations of the Standing Committee on Energy Contained in the Report

Sl. No.	Reference Para No. of the Report	Conclusions/Recommendations
1	2	3
1	1.9	The Committee are surprised to note that the programme to extend IREP to 100 more blocks during 1996-97 could not be taken up pending an evaluation of the programme by National Council of Applied Economic & Research (NCAER) and Operations Research Group (ORG). Though the NCAER Report appears to have been submitted, the ORG report on the programme is reportedly awaited. The Committee fail to understand as to why the programme had to be stopped and the funds curtailed merely on the ground that a particular evaluation report by ORG has not been received especially as the programme is continuing as a Plan scheme. Moreover, NCAER evaluation report has reportedly given a strong recommendation for strengthening and continuing the programme. The Committee strongly feel that the programme should not have been discontinued/ temporarily shelved merely due to non-receipt of the evaluation report by an independent agency.

1	2	3
2.	1.10	The Committee note with serious concern that the outlay for an important rural programme like IREP during the last three years of the plan has been drastically cut down. The trend in allocation of funds to IREP has been hopelessly poor, which obviously constrains the implementation of the programme. The fund allocation for IREP over the 8th Plan period has been too small. Less than 50% of the funds earmarked for IREP during the Eighth Plan period were actually made available to the Ministry. The Committee are of the firm view that so long as allocation remains at present level, IREP will be viewed in terms of playing a marginal role. The Committee feel that there is a need for adoption of an integrated approach to propagate IREP with rural development programme. The Committee stress that there is a strong case for correcting the imbalance in budget allocation for IREP and accordingly recommend that a beginning in this direction should be made by allocating additional funds needed by the Ministry for implementing the IREP in the Ninth Plan Period.
3.	1.6	The Committee observe that the scheme of Renewable Energy Parks launched under the Special Area Demonstration Programme would go a long way in creating

1	2	3
		awareness among the general public as well as students and teachers about the benefits of Renewable Energy Systems and devices. Though, a beginning has been made for setting up of Renewable Energy Parks during 1995-96, release of funds for the programme has been slowed down for a review of the programme by an Expert Group. The Committee trust that the review work would be completed expeditiously and necessary measures be taken for making the programme more effective. The Committee also hope that appropriate measures would be taken to ensure that the Renewable Energy Parks once set up would be maintained properly in the long run.
4.	1.22	The high initial cost is the main reason for slow performance of SPV Water Pump Programme. The production cost of solar modules/ cells is essentially dominated by silicon wafer which is a major and expensive input material. The Committee have been informed that efforts are on to improve the overall performance of solar cells/modules. With improvements in the efficiency of solar modules/cells and increase in production volumes, costs are expected to come down to Rs. 110 per watt in the Ninth Plan period from Rs. 165 per watt in 1995-96.

1	2	3
		The Committee recommend that efforts should be made to expand the use of solar modules/cells to spurt the demand which would break the low production-high cost-cycle and bring about cost reduction. The Committee stress that it is better to involve voluntary organisations in identification of beneficiaries, their training for operation and maintenance and also after sales service for successful utilization of the systems. The Committee desire that awareness programmes through electronic media, highlighting the advantages of using solar PV pumping systems are necessary.
5.	1.30	The Committee are not happy with the performance of Water Pumping Windmills and Small Aerogenerator Systems which suffered a severe set back in terms of achieving targets. The Committee suggest that guidelines should be evolved by the MNES for site selection, suitable arrangements for installation, commissioning and after sales service. The Committee stress that information brochures provided by the manufacturers should be standardised to include all relevant information. Publicity material on windmills should be developed to create awareness amongst the people. The Committee strongly feel the need for strengthening and

1	2	3
		intensification of R & D efforts to improve the design and efficiency of water pumping windmills, aerogenerators and hybrid systems and also to make them cost effective. Further, it is essential to undertake measures for development of performance standards and establishment of independent test facilities for water pumping windmills, aerogenerators and hybrid systems.
6.	1.38	The Committee are of the view that the potential of small Hydro Power is immense in the country. Though, the projects to an extent of 253 MW capacity has been sanctioned during the Eighth Plan period, the projects actually commissioned during the plan amount to only 63 MW. The Committee are of the view that targets for small Hydro Power projects should not merely pertain to the capacity to be sanctioned but also include targets for commissioning. Considering the slow progress of the projects, the Committee urge that steps should be taken to ensure the timely implementation of the projects. The Government should take the initiative in ensuring the progress of the projects in consultation with the States. Efforts should be made to overcome the bottlenecks in the implementation of the projects in consultation with the State

1	2	3
		Governments on the issues involved.
7.	1.45	The Committee note that the total Eighth Plan expenditure on programmes relating to energy recovery from urban and municipal waste was short of the budgeted plan outlay by about Rs. 2.10 crore. Though, the Ministry has informed that significant progress in tapping of energy form waste in now expected, considering the experience of some "energy recovery plants" commissioned in the past, the Committee feel that the need for proper and timely appraisal of the technological aspects of the plants to ensure their successful operation. The Committee also like to be informed of the progress in this field.
8.	1.48	The Committee are of the view that Battery Operated Vehicles as well as vehicles run on other alternate fuels, such as alcohol, are environmentally benign, and have been fairly successful in certain areas. The Committee, therefore, emphasises the need for strengthening the R & D efforts in this area. The Government should consider introduction of vehicles run on alternate fuels in small towns on a limited scale for the purposes of local transport.

1	2	3
9.	1.49	The Committee express the need for an added emphasis on development of renewable energy sources which are not only viable, cost effective and eco-friendly but also available in abundance. Development of renewables would not only reduce our dependance on finite fossil fuels but also extend the life span of such fossil fuels on which we have become excessively dependant for meeting our energy requirements. The Committee feel that sincere efforts need to be made to tap the immense potential of hydel, solar and wind energy so as to ensure a significant contribution from these sources for meeting our energy needs.

MINUTES OF THE TWELFTH SITTING OF THE STANDING COMMITTEE ON ENERGY HELD ON 8TH APRIL, 1997 IN COMMITTEE ROOM 'C', PARLIAMENT HOUSE ANNEXE, NEW DELHI.

The Committee sat from 15.30 to 17.30 hours.

PRESENT

Shri Jagmohan — *Chairman*

MEMBERS

2. Shri Karia Munda
3. Prof. (Smt.) Rita Verma
4. Shri Gyan Singh
5. Shri Muni Lal
6. Shri Manoj Kumar Sinha
7. Shri Sriram Chauhan
8. Shri Sriballav Panigrahi
9. Shri Tariq Anwar
10. Shri Parasram Bhardwaj
11. Shri Ishwar Prasanna Hazarika
12. Shri Sandipan Thorat
13. Shri Anil Basu
14. Shri Haradhan Roy
15. Shri Anand Mohan
16. Shri Chitta Basu
17. Shri Ramendra Kumar
18. Shri Madhavsingh Solanki
19. Shri S.M. Krishna
20. Shri Ved Prakash Goyal
21. Shri Lakhiram Agarwal

SECRETARIAT

1. Shri G.R. Juneja	—	*Deputy Secretary*
2. Shri A.S. Chera	—	*Under Secretary*

WITNESSES

1. Shri A. Parthasarathi	—	*Secretary*
2. Dr. S.K. Chopra	—	*Sr. Adviser*
3. Dr. G.D. Sootha	—	*Adviser*
4. Dr. E.V.R. Sastry	—	*Adviser*
5. Dr. K.C. Khandelwal	—	*Adviser*
6. Shri Ajit Kumar Gupta	—	*Adviser*
7. Shri U.N. Panjiar	—	*Jt. Secretary*
8. Shri J.S. Maini	—	*Jt. Secretary & F.A.*
9. Dr. V. Bakthavasalm	—	*M.D. (IREDA)*
10. Shri D.K. Joshi	—	*Director (Finance)*

2. The Committee took oral evidence of the representatives of Ministry of Non-Conventional Energy Sources in connection with the examination of Demands for Grants (1997-98) of the Ministry of Non-Conventional Energy Sources.

3. The important points discussed by the Committee are as follows:

(i) Energy from Urban Waste.

(ii) Renewable Energy Parks.

(iii) Integated Rural Energy Parks.

(iv) Solar Photovoltaic Pump Programme.

(v) Alternate Fuel for Surface Transport.

(vi) Small Hydro Power Programme.

(vii) Wind Energy.

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

The Committee then adjourned.

EXTRACTS OF MINUTES OF THE FIFTEENTH SITTING OF THE STANDING COMMITTEE ON ENERGY HELD ON 19TH APRIL, 1997 IN COMMITTEE ROOM 'C', PARLIAMENT HOUSE ANNEXE, NEW DELHI.

The Committee sat from 11.00 to 11.45 hours.

PRESENT

Shri Jagmohan — *Chairman*

MEMBERS

2. Prof. (Smt.) Rita Verma
3. Shri Sriram Chauhan
4. Shri Sriballav Panigrahi
5. Shri Tariq Anwar
6. Shri Iswar Prasanna Hazarika
7. Shri P. Kodanda Ramaih
8. Shri Ram Kirpal Yadav
9. Shri Anand Mohan
10. Shri Prem Singh Chandumajra
11. Shri Chitta Basu
12. Shri Madhavsinh Solanki
13. Shri M. Rajasekara Murthy
14. Shri Ramji Lal
15. Shri Ved Prakash Goyal
16. Shri Rajnath Singh 'Surya'

SECRETARIAT

1. Shri G.R. Juneja — *Deputy Secretary*
2. Shri A.S. Chera — *Under Secretary*

2. The Committee considered and adopted the following Draft Reports:

(i) ** ** ** **

(ii) Draft Report on Demands for Grants (1997-98) relating to Ministry of Non-Conventional Energy Sources.

(iii) ** ** ** **

(iv) ** ** ** **

3. The Committee also authorised the Chairman to finalise the above mentioned Reports and present the same to Parliament.

The Committee then adjourned.

**Sub-paras (i), (iii) & (iv) of para 2 relating to consideration and adoption of other draft reports are not included.