

**FIFTEENTH REPORT**  
**STANDING COMMITTEE ON ENERGY**  
**(1994-95)**  
**(TENTH LOK SABHA)**

**NON-CONVENTIONAL ENERGY SOURCES SCHEME**  
**THEIR ASSESSMENT AND IMPLEMENTATION**

**MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES**

*[Action taken by the Government on the recommendations contained in  
the 5th Report of the Standing Committee on Energy  
(Tenth Lok Sabha)]*



*Presented to Lok Sabha on .....*

*Laid in Rajya Sabha on .....*

**LOK SABHA SECRETARIAT**  
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*March, 1995/Chaitra, 1917 (Saka)*

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COMPOSITION OF THE STANDING COMMITTEE ON  
ENERGY (1994-95)

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Shri Jaswant Singh

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- \*\*3. Shri Ajit Singh
4. Shri Anil Basu
5. Shri Chitta Basu
6. Smt. Dil Kumari Bhandari
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(iv)

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SECRETARIAT

1. Smt. Roli Srivastava — *Joint Secretary*
2. Shri G.R. Juneja — *Deputy Secretary*
3. Shri A. Louis Martin — *Under Secretary*

- 
- \* Nominated with effect from 22.7.94 *vice* Shri Ram Tahal Choudhary resigned.
  - \*\* Ceased to be a Member of the Committee consequent upon his appointment as Minister in the Union Council of Ministers w.e.f. 10.2.95.
  - \*\*\* Nominated with effect from 16.11.94.
  - .. Nominated with effect from 25.7.94
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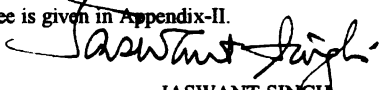
## INTRODUCTION

1. the Chairman, Standing Committee on Energy having been authorised by the Committee to present the report on their behalf, present this Fifteenth report (Tenth Lok Sabha) on Action Taken by the Government on the recommendations contained in the 5th Report of the Standing Committee on Energy (Tenth Lok Sabha) on "Non-Conventional Energy Sources Schemes, their Assessment and Implementation".

2. The 5th Report of the Standing Committee on Energy was presented to Lok Sabha on 22nd April, 1994. Replies of the Government to all the recommendations contained in the report were received on 17th November, 1994. The Standing Committee on Energy considered and adopted this report at their sitting held on 24th March, 1995.

3. An analysis of the action taken by the Government on the recommendations contained in the 5th Report of the Committee is given in Appendix-II.

NEW DELHI;  
28th March, 1995  
Chaitra 7, 1917 (Saka)

  
JASWANT SINGH  
Chairman,  
Standing Committee on Energy.

## CHAPTER I

### REPORT

The Report of the Committee deals with the action taken by the Government on the recommendations contained in the Fifth Report (Tenth Lok Sabha) of the Standing Committee on Energy on, "Non-Conventional Energy Sources Schemes, their Assessment and Implementation" which was presented to Lok Sabha on 21st April, 1994.

2. Action Taken Notes have been received from the Government in respect of all the 28 recommendations contained in Report. These have been categorised as follows:—

- (i) Recommendations/Observations that have been accepted by the Government; Sl. Nos. 1, 3, 4, 5 (i), 5 (ii), 5 (iii), 5 (iv) and 5 (vii), 6 to 10, 12 to 14, 16, 17, 19, 20, 22, 23 and 25 to 28.
- (ii) Recommendations/Observations which the Committee do not desire to pursue in view of the Government's reply; Sl. No. 15.
- (iii) Recommendations/Observations in respect of which replies of the Government have not been accepted by the Committee; Sl. Nos. 11, 21 and 24.
- (iv) Recommendations/Observations in respect of which final replies of the Government are still awaited; Sl. Nos. 2.5(v), 5(vi) and 18.

3. The Committee require that final replies in respect of the recommendations for which only interim replies have been given by the Government ought to be furnished to the Committee at the earliest.

4. The Committee will now deal with the action taken by the Government on some of their recommendations:—

#### *A. Allocation of additional funds to Non-conventional Energy Sources*

##### **Recommendation Sl. No. 2**

5. The Ministry had indicated additional requirement of Rs. 673 crores for budgetary support and Rs. 785 crores under the State plan to achieve the targetted goal in the new Strategy and Action Plan. The Committee felt that there was a strong case for correcting the imbalance in resource allocation for NRSE and accordingly recommended that a beginning in this direction should be made by allocating additional funds needed by the Ministry for implementing the new Strategy & Action Plan in the 8th Plan period.

6. The Government in its reply has stated that it has put forward at the time of the Mid-Term Appraisal of the 8th Five Year Plan, a strong case for a much higher level of allocations for non-conventional energy sector, in view of the implementation of new Strategy & Action Plan in 8th Plan period. At the time of making a detailed presentation on the activities of the Ministry to Hon'ble Prime Minister on 19th April, 1994 the Ministry indicated the level of finances required to implement its revised Action Plan. This was also discussed in the Consultative Committee Meeting of the Members of Parliament, attached to this Ministry held on 24th October, 1994 and it was decided that a Group of Members will meet Prime Minister for emphasizing the need for higher financial allocation to this sector. The Committee also suggested that MOS (NES) may also meet Hon'ble Prime Minister to convey their views. Accordingly, Shri S. Krishna Kumar, MOS (NES) met PM on 1.11.1994 and briefed him about the need for additional funds for the Ministry to sustain the new initiatives and programme launched by MNES. PM agreed to personally intervene and ensure that additional funds are made available to the Ministry this year.

7. The Committee are concerned to note that the efforts of the Ministry of Non-Conventional Energy Sources at various levels have not as yet yielded the additional funds required by the Ministry. The Committee note that the Prime Minister has agreed to personally intervene and ensure that additional funds are made available to the Ministry this year. The Committee hope that the Prime Minister's assurance will bear results.

### *B. Perspective Plan*

#### **Recommendation Sl. No. 3**

8. The Committee had, inter-alia, urged that a perspective plan for exploiting the vast potential of new and renewable sources should be drawn up at the earliest and commensurate programmes formulated to be included in successive Five Year Plans. The Government's reply is silent on the question of formulating a perspective plan. The Committee note seriously that the Government has not responded to this important recommendation. The Committee expect the Government to furnish its reply on this point within a month.

### *C. Soft loans to Co-generation Project*

#### **Recommendation Sl. No. 5(v)**

9. In order to bring about additionality of resources, the Committee had recommended that co-generation projects in sugar factories should be included under the modernisation programme for which sugar development fund provides soft loans to the sugar factories.

10. The Government has stated in its reply that the matter has been taken up



with the Ministry of Food which is administering the fund. In a meeting of the Standing Committee of the Sugar Development Fund held under the Chairmanship of Secretary, Ministry of Food, on 11.8.1994, the MNES proposal for inclusion of optimised co-generation as a part of sugar mill modernisation, was reportedly included for discussion. The Secretary, Food has requested MNES to bring up a specific proposal covering financial assistance for various eligible elements of the optimised co-generation schemes, for consideration of the Standing Committee. MNES is stated to be preparing a suitable Note in consultation with representatives of the concerned agencies.

11. The Committee regret to note that nearly seven months after presentation of the report to Parliament, the Government has taken no decision on the question of providing soft loans to co-generation projects of sugar factories from Sugar Development Fund. It is only now that the Ministry of Non-Conventional Energy Sources is stated to be preparing a specific proposal covering financial assistance for various elements of the optimised co-generation schemes for consideration of the Standing Committee of the Sugar Development Fund. The Committee need hardly to emphasise the urgency of power generation from co-generation projects. The Committee therefore, expect the Government to take expeditious decision in the matter.

#### *D. Demand for SPV System*

#### **Recommendation SI. No. 9**

12. The Committee had urged that efforts should be made to expand the use of photovoltaics to spurt the demand which would break the low production high cost cycle and bring about cost reduction. The Committee also noted that BHEL had been working on the development of polycrystalline silicon solar cells and also entrusted with the responsibility for establishing 500KW/shift pilot plant at Gurgaon for amorphous silicon modules. The Committee desired that this new technology should be given a laboratory trial in a given time frame and a successful commercial utilisation ensured by creating suitable production capacities in the new plants.

13. It has been state in the reply that the Ministry is in the process of evolving suitable plan for upgradation of amorphous silicon technology, some manufacturers in the private sector are also exploring the possibilities of setting up manufacturing units using amorphous silicon solar cell technology.

14. The Government has not indicated whether any efforts were made, as recommended by the Committee, to expand the use of photovoltaics so as to enhance the demand, thus break the low production high cost cycle and bring about cost reduction. The Committee hope that Government has taken note of this recommendation and will initiate suitable action.

*E. Income Tax rebate for domestic solar water heating system*

**Recommendation Sl. No. 11**

15. In order to reverse the trend of decline in installation of solar water heating systems consequent on withdrawal of subsidy, the MNES has pleaded for 100% income tax benefit to the user of domestic solar water heating system. The Committee saw merit in Ministry's plea as the commercial users already had this incentive. An economic cost benefit analysis of income tax rebate also showed a net gain to the economy. The Committee therefore, recommended that the question of income tax rebate should be looked into by the Ministry of Finance on a right perspective and the relief sought for be announced at the earliest.

16. It has been stated in the reply that the question of income tax rebate to individual for installation of domestic solar water heating systems had been constantly pursued with the Ministry of Finance. Ministry of Finance is stated to have expressed its difficulty on administrating such a concession. MNES subsequently decided to provide more-liberalized loan scheme with lower interest rates through IREDA for installation of domestic solar water heating under the market oriented scheme. It is observed from the reply that the installation of solar water heating systems without subsidy was only 15508 M2 during 1993-94.

17. The Committee are not satisfied with the Government's reply. What exactly is the difficulty in administering the income tax rebate if extended to the users of domestic solar water heating system has not been disclosed. Considering the fact that installation of these systems without subsidy has sharply dropped to the level of 15,500 M2 in 1993-94, the Committee feel that income tax rebate to the domestic users of this system is necessary to promote this programme. Given the will, it should be possible to work out a feasible mechanism to extend the income tax concession. The Committee, therefore, stress that Ministry of Non-Conventional Energy Sources must-prevail upon the Ministry of Finance to reconsider this issue and the Committee be apprised of the outcome accordingly.

*F. Biomass based power plants scheme*

**Recommendation Sl. No. 18**

18. The Committee had noted that about 94 million tonnes of agro-residues and industrial wastes are reportedly not used at all for any purpose annually. Biomass gasifiers opens a vast potential for village electrification in remote and inaccessible areas where biomass is available in abundance. The Committee felt that this could perhaps be an ideal solution for the electrification of remote villages in hilly areas, inside deep forests and islands.

19. The Government has, *inter-alia*, stated that the biomass based power plant scheme for rural electrification at village/taluka level is being formulated by the ministry to be taken up during current financial year and remaining period of VIII plan.

20. The Committee are glad to note that a biomass based power plants scheme for rural electrification is under formulation. The Committee desire that the scheme should be formulated and launched expeditiously under intimation to the Committee.

### *G. Institutional Support to NGOs*

#### **Recommendation Sl. No. 21**

21. The Committee had recommended that institutional support should be provided to organisations like CARTMAN to improve the designs of animal drawn plugh and other equipments with a view to reducing the burden on the animals and also to improve the efficiency of equipments.

22. It has been stated among other things in the Government's reply that MNES continues to provide finance to CARTMAN and other organisations on project to project basis but there has been no provision to provide only institutional support to any organisation including NGOs.

23. The Committee are aware that there is no provision to provide institutional support to NGOs. What the Committee intended was an examination by the Government of the question of providing institutional support to organisations like CARTMAN. It appears that no such examination has been undertaken by the Government on the basis of the Committee's recommendation. The Committee reiterate that this should be done now and the outcome of the examination reported to them.

### *H. Exploitation of Tidal Energy*

#### **Recommendation Sl. No. 23**

24. The Committee failed to understand why our country had to lag behind in exploiting the large potential of tidal energy considering the fact that this has been exploited commercially by several countries in the past nearly three decades. Taking note of the fact that a tidal energy power plant of 240 MW capacity was stated to be in operation in Finance since 1966, the Committee observed that a pre-investment feasibility study had been proposed to be conducted for establishing a 900 MW tidal power project in the Gulf of Kutch. The Committee desired to be apprised of the anticipated power generation cost and the likely completion schedule of this project. The Committee stressed that efforts should be made to set up such projects in other feasible sites early, if found commercially viable.

25. It has been stated in the reply that the limiting factor in the execution of this project has been its exorbitant cost. The total cost of the project has been estimated by the National Hydro-electric Power Corporation to be approximately Rs. 6286 crores at May, 93 price level. The cost of generation per MW is as high as Rs. 5.6 crores again at May, 93 price level. When compared to conventional

modes of power generation (thermal and hydel) this figure is almost double. Furthermore, the price of electricity generated by this project has been estimated by NHPC to be Rs. 7.22 per KWH against at May, 93 price level. However, Ministry is reportedly in the process of inviting technology offers from across the world so that modern foreign technology can be attracted as per the present guidelines of the Government.

26. The Committee note the Government's reply that the cost of power generation from a tidal power project is high. It has however, not been explained how the tidal energy is exploited commercially in several other countries. The Committee desire that the experience in other countries in this regard should be studied and appropriate measures taken to exploit tidal energy potential in our country.

*I. Survey and identification of possible sites for exploitation of Ocean Thermal Energy*

**Recommendation Sl. No. 24**

27. In view of the vast potential of ocean thermal energy indicated by the MNES, the Committee had suggested that a separate cell may be set up to conduct extensive survey and identify the possible sites to enable exploitation of ocean thermal energy.

28. In its reply, the Government has stated that under the New Technology division of MNES, the Ocean Energy Cell has been strengthened. It has been stated that the main objectives of the Ocean Energy Programme are to develop technologies on OTEC, Wave and Tidal energy for power generation and to promote and facilitate the harnessing of energy from Ocean. The Ministry is reportedly continuing to provide administrative support to the projects for harnessing power from wave energy and by OTEC.

29. The reply is silent with regard to the task of conducting survey and identifying the possible sites for exploitation of ocean thermal energy. It appears from the reply that the Ocean Energy Cell in MNES is not undertaking this task. In the Committee's view, identification of possible sites is a prerequisite for speedy exploitation of ocean thermal energy. The Committee, therefore, reiterate that this task should be undertaken on priority basis.

*J. Funds for Research & Development*

**Recommendation Sl. No. 26**

30. The Committee had *inter-alia*, suggested that major public undertakings like BHEL should be directed to provide more funds for R&D particularly to new and renewable energy technologies. The Committee also felt that private sector

should also be asked to include a definite percentage of funds for R&D in their project report for new Industry. The Committee also suggested that the feasibility of including this as a condition before sanction of funds by financial institutions should be examined.

**31. The Government has not responded to this recommendation. It appears that the matter has not been taken up by the MNES with the concerned Ministries/authorities. The Committee take serious note of the inaction in this respect on the part of the MNES. The Committee expect the Government to take up this matter with the Ministries concerned and the Committee be apprised of the final action taken by the Government on their recommendation.**

## **CHAPTER II**

### **RECOMMENDATIONS/OBSERVATIONS THAT HAVE BEEN ACCEPTED BY THE GOVERNMENT**

#### **Recommendation Serial No. 1**

Renewable energy sources are perennial, dependable and abundantly available besides being non-polluting and environment friendly. One viable option to the problem of increasing energy shortage lies in harnessing new and renewable sources of energy (NRSE). The Committee's examination of Non-Conventional energy sources schemes reveals that the record of harnessing renewable energy until recently was rather poor. With the exception of biogas plants and improved chulhas, implementation of most of the other programmes were not at desired level. The Committee however find that in the area of power generation some renewable energy technologies such as of wind power, small hydels, bio-mass gasification and co-generation have reached the stage of commercialisation. The Committee feel that for catalysing the market development and to ensure that the NRSE play their due role in generation of power/energy, there is a need to step up the pace of implementation of the on-going programmes and launch new programmes of demonstration and utilisation of renewable energy technologies.

#### **Reply of the Government**

As reported to the Committee, Ministry of Non-Conventional Energy Sources has prepared an Strategy & Action Plan for the remaining period of the 8th Plan to step up its programmes. The Strategy & action Plan envisages a four fold increase aiming at a target of 2000 MW of generating power from renewable energy sources against the original planned target of 500-600 MW through mobilising institutional finance, private sector investment stimulated through entrepreneur development and a package of incentives, in addition to budgetary allocations. It strives for commercialisation in the shortest possible time so that the market forces can take over the programmes for wider propagation and use by beneficiaries, households, industrial organisations and entrepreneurship. The Plan also envisages programmes for viillage electrification in unelectrified and remote rural areas through application of solar photovoltaic technology, with nearly one lakh numbers of solar lanterns to be propagated during a year, and launching of a new programme for deep well solar pumps for irrigation. Wider application of solar thermal energy; launching of several national programmes for bio-energy utilisation with participation of industry and municipal bodies in the field of co-

generation of power, recycling of industrial wastes, utilisation of urban and municipal wastes are envisaged in the Strategy and Action Plan. Universalisation of rural cooking energy programmes of biogas and improved chulhas with the installation of 10 lakh numbers of biogas plants and 180 lakh numbers of improved chulhas. The enhanced targets includes installation of 11 lakh square metres of solar thermal collector area and 7 lakh numbers of solar cookers in the 8th Plan. Setting up of the projects in the new and emerging areas of technologies, such as, tidal power, geothermal and ocean thermal energy conversion etc. are the other highlights of the new strategy and action plan.

The Execution of the Action Plan was started about a year before. Activities in all the programmes have been stepped up and necessary policy changes have been made to create suitable policy environment and support for market mechanism to increase participation of private sector in the production and utilisation of Non-Conventional energy sources. The Ministry has launched a National Programme of Human & Animal energy. A new programme is being formulated to set up power plants at Taluka level through Biomass based technologies. The integrated rural energy programme (IREP) has been transferred from Planning Commission to MNES w.e.f. 1st April, 1994. Efforts are being made to develop linkages with ongoing programmes of MNES, Ministry of Rural Development, Ministry of Power through IREP. The implementation of all the programmes are being done as per new strategy and action plan. The Annual Plan for 1995-96 has been prepared keeping in view the targets of the Strategy & Action Plan.

All the State Governments have been requested to step up their programmes and issue policy guidelines in line with the Central Government Programmes of NRSE. A conference of Chief Minister's and Ministers-in-charge of Non-Conventional Energy held in New Delhi on 17th September, 1994 to discuss various issues relating to implementation of renewable energy programmes in the States.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

### **Recommendation Serial No. 3**

The Committee find that there is a vast potential of 20,000 MW for wind power and 17,000 MW for biomass and 10,000 MW for Mini-Micro Hydel power. Ocean Thermal, Sea Wave and Tidal power constitute a potential of 79,000 MW. Besides these, there is vast availability of solar energy. On the basis of data available so far an ambitious programme for installation of 12 million biogas plants and 120 million improved chulhas, can be considered as achievable which if fully implemented would save wood equivalent to over 120 MMT/Year. As against this enormous potential, the number of biogas plants installed is 1.8 million and improved chulhas 15.3 million. According to MNES the power generation capacity installed so far is just 71 MW of wind power. 105 MW Small Hydel Power and 15MW biomass based systems. As these systems are cost effective and

can be commercialised, the Committee urge that a perspective plan and a crash programme for exploiting the vast potential of New and Renewable sources should be drawn up at the earliest and commensurate programmes formulated to be included in successive Five Year Plans.

#### **Reply of the Government**

The New Strategy and Action Plan prepared by MNES takes into consideration the vast potential of New and Renewable Sources of energy. Every year, an Annual Action Plan is prepared for all the programmes implemented by the Ministry to achieve targets for the year. The Annual Plan 1995-96 is prepared keeping in view the revised targets set for the Eighth Plan. As per the suggestion given by the Committee on Energy, the successive Five Year Plans will be prepared keeping in view the overall vast potential of Renewable Energy in the country.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Comments of the Committee**

(Please see paragraph 8 of Chapter I of the Report)

#### **Recommendation Serial No. 4**

The Committee note that the Ministry has prepared a "New Strategy & Action Plan" which aims at generation of nearly 2000 MW of power through wind, Small Hydro and Bio-energy sources as against 600 MW envisaged earlier in VIII Plan. It also envisages propagation of one lakh number of solar lanterns during a year; launching of new programme for 50,000 deep well Solar Pumps for irrigation wider application of Solar Thermal energy; launching of several national programmes for bio-energy utilisation and setting up of projects in the new a emerging areas of technologies such as tidal power, geo-thermal and ocean thermal energy conversion, etc. The Committee would urge that the MNES should periodically monitor the progress and ensure that the targets aimed in the Action Plan are achieved without shortfall.

#### **Reply of the Government**

All the programmes implemented by the Ministry are periodically monitored at various levels. Internal and external monitoring reviews are conducted by the Ministry on a periodic basis. While the MOS (NES) personally reviews the programmes on a monthly basis, periodic reviews are taken by Secretary of the Ministry. The programmes are field-reviewed through extensive visits of offices from time to time. The Ministry organizes Business meets for large-scale propagation and commercialization of various renewable energy technologies



The implementation of the programmes and policies at the State-level are reviewed by each programme group and also in Annual Meetings with the State Secretaries in charge of Non-conventional Energy Sources and in the Meetings of Chief Ministers and Ministers in charge of Non-conventional Energy Sources. During the year 1994-95, the State Secretary-level Meeting was held on 27th June, 1994 and the Chief Minister's Meeting was held on 17th September, 1994.

The Ministry is confident of achieving the targets set in its New Strategy and Action Plan.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 5(i)**

The Committee find that wind energy, small hydro and bio-mass based co-generation have been identified as areas holding considerable promise for grid interactive power generation. There are however some institutional or operational impediments which come in the way of quick exploitation of the potential. The measures called for in this connection are indicated below:

- (i) There is need for development of suitable infrastructure and allotment of land to wind farms and small hydro developers by State Governments. In the case of private lands, the concept of making land owner a co-sharer in the project and the possibility of putting the land to conjunctive use be examined and promoted.

#### **Reply of the Government**

The State Governments/ Implementing Agencies have been advised to develop suitable infrastructure for facilitating implementation of power projects based on Non-Conventional Energy Sources. They have also been requested to expedite allotment of land, on easy terms, and to encourage conjunctive and optimum use of land in potential areas for development of power projects. Since most of the development is taking place in the private sector, land is generally being purchased outright from private owners on mutually agreed terms. However, the possibility of involving the land owners as co-sharers in the projects is also being suggested.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 5(ii) and (iii)**

- (ii) The Committee note that private sector has shown considerable interest in establishing Wind Farm, Small Hydro and Co-generation projects.

However, most of the States are yet to announce a clear promotional policy to attract private developers and entrepreneurs. The Ministry has suggested guidelines to States including wheeling, banking, third party sale, minimum buy-back rate of Rs. 2.25 per unit, etc. The Committee have been informed that some of these incentives are already available in Gujarat, Tamil Nadu and Andhra Pradesh. The Committee suggest that the other State Governments should also announce the policy in this regard expeditiously.

- (iii) The Committee have been informed that there is delay in planning and execution of the projects on account of multiplicity of agencies at the State level, who are concerned with these projects. The Committee feel that a suitable institutional framework should be set up for dealing with these projects. The Committee would suggest that as already done in few States, a State Level Committee should be set up to coordinate and provide "Single Window" clearance and a separate "Cell" should be set up in the State Electricity Boards to provide assistance to entrepreneurs.

#### **Reply of the Government**

Guidelines on these aspects have already been issued to the State Governments, and many of the potential States have announced their policies in this regard. Follow-up with other States is continuing. The issues concerning private sector policies as well as conducive institutional arrangements have again been reiterated in the Chief Ministers Conference held in September, 1994.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 5(iv)**

There is considerable delay in environment and forestry clearance for wind power and small hydro projects. The Ministry of Environment and Forests should take early decision on the question of exemption of environmental clearances for small hydro projects upto 5 MW and simple and quick procedure evolved for relatively larger projects, say upto 15 MW. This will enable speedy exploitation of small hydro potential which is abundant in regions like North Bihar and other river basins.

#### **Reply of the Government**

The matter was taken up with the Ministry of Environment and Forests, and environmental clearance for non-conventional energy based power projects is now not required, except for small hydro projects costing over Rs. 50 crores. The matter regarding allotment of reserved forest land is being further pursued.

Suggestions have been invited from the States to evolve suitable guidelines in this regard.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 5(vii)**

The Committee recommend that small hydro projects upto 15MW should be transferred to the Ministry of Non-Conventional Energy Sources.

#### **Reply of the Government**

This has already been agreed to by Ministry of Power. Cabinet Secretariat have been requested to suitably amend the Allocation of Business Rules.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 6**

The Committee note that on the basis of wind assessment programme undertaken so far specific sites have been identified mostly in the peninsular region. The Committee learn that there are several gaps in the Aravali range in Rajasthan which offer ideal spots for exploiting the wind potential. The Ministry is also hopeful of discovering suitable wind speeds in mountain regions of Himachal Pradesh, UP and North-East. The Committee desire that wind assessment programme should be completed in a given time frame and the sites with wind potential suitable for power generation in all parts of the country should be identified and published to accelerate exploitation of this potential.

#### **Reply of the Government**

The National Wind Resources Assessment Programme has already been taken up in 25 States and UTs to assess the potential and identify suitable sites for setting up wind power projects. Efforts are being made to extend the programme to the remaining States/UTs. Rajasthan Government have been requested to assist in the identification of sites for installation of masts in the Aravali range; work is in progress. It is also proposed to survey the hilly and mountaineous areas utilising latest techniques. The third volume of the Handbook on "Wind Energy Resources Survey in India" has been published in August, 1994, and data for specific stations is also available on floppy diskettes.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

**Recommendation Serial No. 7**

At present, data for three years is collected to assess the wind speed at a particular site. According to an expert one year data in this regard will be sufficient to make an assessment. The Committee therefore recommend that the desirability of curtailing the period of assessment of one year may be examined keeping in view the need to accelerate harnessing wind power potential.

**Reply of the Government**

It is advisable to have three years continuous data for setting up of wind farm projects, in order to take into account inter-annual variations. However, since most of the development is taking place in the private sector it is for the private investors to consider implementation of projects on the basis of one year's data.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

**Recommendation Serial No. 8**

Under the SPV programme, 30438 street lighting systems, 18,970 domestic lighting systems, 7624 solar lanterns, 808 community lighting TV systems and 101 power plants totalling 531 KW have been installed. An appraisal of this programme by CAG has brought out that most of the systems installed under SPV programme were not working mainly due to lack of proper maintenance, poor performance of the systems and apathy of local users. The average failure rate of street lighting, domestic lighting systems and water pumps ranged from 25% to 100% in some States surveyed. The Committee feel that this problem could be solved only if sufficient training is imparted to the users and the systems entrusted to the village panchayats or any other responsible body in the village for operating and maintaining the systems. In the subsidy based programme, the manufacturers of the systems hardly had any incentive for giving services or guarantees. The Committee note that the programme has been restructured recently and given a market orientation and two separate schemes *i.e.* Market Oriented and Socially Oriented Schemes introduced. The Committee hope that the Ministry will exercise care to see that past failures do not recur and appropriate measures taken to successfully implement socially oriented scheme where the chances of such failure are more.

**Reply of the Government**

Various observations made by CAG in its report on solar energy have already been taken up with the concerned State Nodal Agencies and Electricity Boards. State agencies have been asked to take necessary corrective actions. Response from some of the State Agencies on action taken by them have been received and

implementation scheme. In the new guidelines issued by the Ministry to concerned State Nodal Agencies, Electricity Boards and SPV manufacturers emphasis is laid on testing & type approval of the products. Requirement of training and after sales service of the products are also emphasized.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 9**

The high initial cost is the main barrier in SPV technology. The production cost of solar cell/modules is essentially dominated by the silicon wafer which is a major and expensive input material. The Committee have been informed that efforts are on to improve the conversion efficiency of solar cells from 15% to the level of 18-20%. With improvements in the efficiency of solar cells and increase in production volumes costs are expected to come down to Rs. 100/Wp in next 3-4 years from the level of Rs. 195/Wp. The Committee urge that efforts should be made to expand the use of photovoltaics to spur the demand which would break the low production high cost cycle and bring about cost reduction. The Committee also note that BHEL is working on the development of polycrystalline silicon solar cells and also entrusted with the responsibility for establishing 500KW/shift pilot plant at Gurgaon for amorphous silicon modules. The Committee desire that this new technology should be given a laboratory trial in a given time frame and a successful commercial utilisation ensured by creating suitable production capacities in the new plants.

#### **Reply of the Government**

Ministry is in the process of evolving suitable plan for upgradation of amorphous silicon technology, some manufacturers in the private sector are also exploring the possibilities of setting up manufacturing units using amorphous silicon solar cell technology.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Comments of the Committee**

(Please See paragraph 14 of Chapter I of the Report)

#### **Recommendation Serial No. 10**

The Committee note that for promotion of solar thermal power generation a R&D-cum-demonstration project of 30MW size has been proposed to be installed in Rajasthan in association with M/s Solel of Israel. The Committee note this

project which had originally been conceived 15 years back is till at the stage of preparation of project report. Time and cost overrun ultimately make such efforts prohibitive and difficult to be undertaken on the plea of paucity of funds. The Committee desire that the project should be taken up for execution early and completed on schedule so that the project may induce private sector participation in setting up of such projects elsewhere.

#### **Reply of the Government**

The Detailed Project Report for a 30 MW solar thermal power project near Jodhpur in Rajasthan has been completed by BHEL in association with their foreign associate, in early October '94. Efforts are being made to mobilise funds for implementation of the project. The Committee's desire for early execution of the project has been noted, and follow-up action will accordingly be expedited.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 12**

The Committee note that the matter regarding obligatory use of solar water heating systems in hotels, hospitals and hostels has been taken up with the State Governments following a policy decision taken by the Ministry of Urban Development in this regard. The Committee suggest in this connection that the desirability of wider provision for mandatory use of solar water heating system in all Government buildings and public sector undertakings and also the need for amendment of Building Bye-laws by State Governments to incorporate mandatory use of these systems should be examined and if found appropriate, steps should be taken early to implement the same.

#### **Reply of the Government**

Ministry of Urban Development has issued a circular No. N-11/25/94-UCD dated 11.4.94 to all State Governments requesting them to implement the mandatory order for solar water heating systems in respect of functional buildings under their control. They have also been requested to issue directives to their local bodies to modify the building bye-laws for providing the above mandatory provisions.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### **Recommendation Serial No. 13**

The Committee are not impressed by the number of solar cookers sold during the last 12 years of the subsidy scheme which is just about 3.10 lakh. Considering the advantages of this device particularly in solving the fossil fuel shortage, the Committee felt that it should have been possible to propagate the use of solar cookers on a large scale. The MNES has proposed to withdraw the subsidy on solar cookers from April, 1994. Now that the programme will be market driven, the Committee hope that it will yield a better product at a competitive price and eventually ensure wider use of solar cookers.

#### **Reply of the Government**

In order to popularize solar cooker on a larger scale, the Ministry has to withdraw the Central subsidy on solar cooker with effect from April 1994 and it has been decided to provide grant-in-aid to various State/UTs/agencies for the development of marketing and after sale and awareness campaigns through publicity and demonstration etc. Solar Cooker Programme 1994-95 with these provision is being launched.

This approach of market orientation is expected to provide better product to the user at a competitive price and increase the sale.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### **Recommendation Serial No. 14**

One of the barriers to market expansion of domestic renewable energy systems and devices like biogas, improved chulhas, domestic solar hot water systems, solar cookers etc. is stated to be low availability of institutional financing for these devices. The Committee desire that efforts should be made for ensuring greater participation of financial institutions including commercial banks in financing the non-conventional energy devices.

#### **Reply of the Government**

Family type biogas plants are being promoted under National Project for Biogas Development (NPBD). So far over 20 lakh biogas plants have been set up in the country. NPBD provides Central subsidy in fixed amounts which works out to about 25-40% of the capital cost of plants depending on models, areas and categories of beneficiaries. The balance cost is required to be met by beneficiaries either from their own resources or by raising loans from banks. All commercial and cooperative banks are providing loans for biogas plants under "Agriculturally Priority Area". National Bank of Agriculture and Rural Development (NABARD) is providing the facility of automatic refinancing to commercial banks for biogas

plants. Reserve Bank of India has also been supporting the programme. However, an evaluation survey study of biogas plants set up during the 7th Five Year Plan period conducted by National Council of Applied Economic Research (NCAER), New Delhi indicated that only 44% of plants were set up with bank loans. In line with the recommendation of the Standing Committee on Energy, the matter has already been taken up in March, 1994 with the Ministry of Finance and also with Chairman-cum-Managing Directors of 20 major commercial banks. Banks have assured their whole-hearted participation in the biogas programme and have issued directions in this regard to their branches.

It was found that a condition stipulating banks not to provide loans to the beneficiaries who have already availed this facility under any subsidy linked programme of the Government, was limiting the smooth flow of finance for biogas plants. The matter has been resolved and the Reserve Bank of India has now communicated to all banks for not applying this condition for biogas programme *vide* letter No. RPCD. PLFS; BC No. 36/05.03.15, 94-95 dated September 15, 1994. The contents of this letter have been sent to all State Governments nodal departments and agencies for onward transmission to field functionaries to liaise with bank branches and get more applications sanctioned during 1994-95.

The estimated cost of an improved chulha is about Rs. 70/- to Rs. 130/- depending upon the type of models and materials used. Generally, users do not opt for getting loan for such a small amount.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### **Recommendation Serial No. 16**

Though there has been considerable progress in installation of biogas plants and improved chulhas, their functionality rate leaves much to be desired. While the failure rate was over 50% in the case of biogas plants in some States, it was in the range of 25-30% in the case of improved chulhas. The Committee desire that special emphasis needs to be given on development of micro-organisms that can produce biogas under low temperatures and with low water consumption and also development of alternative feed stocks and low-cost designs in respect of biogas plants. For the success of community biogas, there is a need to involve and ensure the commitment of the local people.

### **Reply of the Government**

MNES has revised R&D strategies for all programmes including biogas since May, 1994. The revised thrust areas for R&D on biogas include: development of microbial cultures, *inter-alia*, for efficient biogas production at low temperature, and different kinds of feed-stocks. It also includes studies on dry fermentation which would require lesser quantity of water. Already work is in progress for



developing cultures and a new design for production of biogas from leafy biomass and rice straw at three institutions. research institutes have been approached to submit proposals in line with the new thrust areas and also to involve industries concerned, possibly on cost sharing basis.

Community biogas plants set up in the past have faced the problem of non-cooperation of the local people. Now Ministry is promoting community biogas plants only in the areas where commitment and involvement of local people including financial participation are ensured. The nodal agencies in the States of Gujarat, Maharashtra and Punjab have already made efforts to establish local voluntary groups or societies for operating and maintaining community biogas plants. With the participation of local organisations and involvements of Non-governmental Organisations, only 18 Community Biogas Plants have been set up during 1993-94.

For improving the functionality of improved chulhas, several steps have been undertaken including the following:

- (i) Involvement of private entrepreneurs and non-governmental organisations to achieve a minimum of 50% of targets for installing chulhas during 1994-95 with one year's maintenance warranty.
- (ii) Manufacturers of portable metallic chulhas have been asked to produce such chulhas conforming to ISI code No. 13152 (Part 1), 1991. Eight Technical Back-Up Units set up under the National Programme of Improved Chulha have been recognized by Bureau of Indian Standards (BIS) as Test Centres for chulhas and they are taking quality control measures as per the requirement of Bureau of Indian Standards (BIS).
- (iii) A massive extension and awareness raising campaign has been launched, it includes demonstrations by non-governmental organisations, panchayats, manufacturers etc. At the Central level publicity of the programme is being arranged through commercial services of All India Radio, Doordarshan and Press advertisements. At the State level such campaigns are undertaken by the implementing agencies through AIR stations, Doordarshan Kendras and also through press advertisements in the regional languages. Further, Nodal Departments/Agencies and Voluntary organisations are giving emphasis on choice of models to suit household requirements during users' training courses.
- (iv) It is proposed to get another evaluation survey shortly to be conducted for chulhas set up during 1992-93 to 1994-95 by National Council for Applied Economic Research (NCAER), New Delhi.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

### **Recommendation Serial No. 17**

The proposed establishment of a National Bio-energy Board to develop a national strategy for bio-energy development is a step long overdue. This is expected to provide impetus to the bio-energy development programme utilising high rate biomethanation processes. The Committee note that demonstration plants on utilisation of Urban/Municipal and vegetable market waste. The Committee desire that the task of setting Industrial Wastes are planned to be set up over a period of five years with an outlay of nearly Rs. 31 crores. These projects will include community sewage, leather effluent/soil waste, abattoir waste, pulp and paper effluent and vegetable market waste. The Committee desire that the task of setting up of these demonstration plants should be accomplished expeditiously without bracketing into a five year long time frame.

### **Reply of the Government**

The National Bio-energy Board (NBB) in the Ministry of Non-conventional Energy Sources has been constituted in pursuance of the decision of the Commission on Additional Sources of Energy. The board is functioning since April, 1994.

Two meetings of the NBB have been held. The board has reviewed the progress of preparatory work and action taken in expediting the same.

The National Bio-energy Board will provide policy guidance and direct for development of a national strategy for Bio-energy development for long range planning purposes and would also be the apex body rested with full administrative and financial powers for programme(s) on energy recovery from variety of urban, municipal and industrial wastes in general, in addition to implementation of the UNDP/GEF assisted programme on "Development of High Rate Biomethanation Processes"

A Project Management Cell, as envisaged in the UNDP/GEF assisted programme as the agency responsible for day to day management of all activities under the project, has been also established and operationalised since September, 1994 with delegated authority required for implementing various activities/sub-projects.

Even though the Project Document was signed by UNDP/GOI on 15/3/94 (effective from 1/4/94), as per UNDP guidelines, the effective date of commencement of the project has since been treated as 1st September, 94.

The schedule of activities are under constant review of NBB. It would be endeavour of the NBB to compress time frame and expedite the task of setting up of the demonstration plants as per guidelines for Nationally Executed UNDP assisted projects. Advance actions have been initiated on several activities, simultaneously.

[Ministry of Non-Conventional Energy Sources. O.M. No. 9/77/93-P&C.

**Recommendation Serial No. 19**

The Committee are not happy with the performance of wind pump demonstration programme which suffered severe setback in terms of achieving targets and functionality. Over 2800 shallow well water pumping wind mills have been installed so far which were installed with the full cost of the hardware being funded by MNES. A cost sharing scheme has reportedly been launched during the current year with MNES contribution limited to about 50%. The performance of wind battery chargers programme was no better. The Committee desire that the programmes relating to wind pumps and wind battery chargers should be thoroughly reviewed with a view to identifying deficiencies and taking appropriate corrective measures.

**Reply of the Government**

The new cost sharing scheme for water pumping wind mills was formulated and launched in December, 1993 after having deliberations with the technical experts, representatives of the manufacturers and nodal agencies on the status of the technologies, their capabilities and limitations. In the new scheme for wind mills, attempts have been made to minimize the management aspects of installation and after sales service and emphasis has been laid on multi level monitoring of programme implementation. Keeping in view the limitations of shallow well wind mills, (12PU 500 type) deep well gear type wind mills were introduced under Operations Research Programme during 1989-90 and 1990-91. About 220 such wind mills are reported to have been installed in nine States of the country. An independent agency is studying various techno-economic and management related aspects of water pumping wind mill system. Under cost sharing scheme about 10 wind mills have already been installed and 32 are under installation. Small Wind Battery Chargers programme mainly suffered on account of non-availability of spares of foreign manufactured machines. In the meantime some manufacturers started making small wind generator for battery charging in the country. A programme for field evaluation of indigenously manufactured small aerogenerator for battery charging and standalone power generation has been initiated during 1993-94. Six small wind battery chargers are under installation under the scheme.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

**Recommendation Serial No. 20**

There is a great scope for developing and marketing improved animal drawn vehicles suitable for different areas of the country. According to MNES, improved designs of carts developed by CARTMAN and by a private organisation have been taken up for demonstration and a national programme to increase the transport capability for short distance haulage using the Draught Animal Power System is

being developed. The Committee desire that the programme should be finalised and launched soon and the Committee be apprised of the details of the programme.

### **Reply of the Government**

The Animal Energy Programme includes the following:

#### *I. R&D:*

The following R&D projects are ongoing:

- (i) Transfer of Two Wheel Cycle Tractor Technology to Rural Areas—Institute Engineering and Rural Technology, Allahabad.
- (ii) Popularisation of bullock carts in A.P.—CARTMAN, Bangalore.

Further thrust areas for sponsored R&D projects have been finalised as indicated in reply to Recommendation No. 21.

#### *II. Market Development and Demonstration:*

A proposal for market development demonstration of tropicultor has been formulated by Indian Renewable Energy Development Agency (IREDA), New Delhi, a financing institute of MNES. It envisages programme for providing 90% of the cost as soft loan to manufacturers. Besides, provision for publicity, training etc. have also been included. The proposal is under consideration.

#### *III. Training Programme:*

Details of requirements of training for fabricators, entrepreneurs, blacksmiths and users are being worked out in consultation with Ministry of Rural Development, ICAR's institution namely Central Institute of Agriculture Engineering, Bhopal.

#### *IV. Extension and Publicity:*

An awareness raising campaign has already been planned to start with in Integrated Rural Energy Programme (IREP) blocks in the State of Madhya Pradesh.

At the Central level, publicity through both electronic and print media are being arranged.

*V. Competition on new design:*

An all India competition on new design of animal drawn carts and implements is being planned.

*VI. Regional Conferences:*

Seven Regional Conferences have been planned, one each at Bhopal, Bangalore, Bhubaneswar, Allahabad and Shillong.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

**Recommendation Serial No. 22**

With commercial scale manufacture of battery operated vehicles for 18 seater/ 32 seater capacity and different models for industrial uses, the programme for battery operated vehicles needs to be enlarged. This should get proper publicity so that industrial units, paramilitary forces, defence establishments etc. where vehicles are utilised for transportation of employees at short distances are attracted to use these vehicles. The Committee hardly see need to emphasis the need for concerted efforts to develop bigger vehicles with higher payload capacity and longer ranges.

**Reply of the Government**

For the obvious reasons of diesel saving and environmental friendliness MNES has launched BOV demonstration programme. At present MNES provides subsidy for 4 passenger model BOVs, 2 each of BHEL and Chatelec make and 3 industrial model BOVs, 2 of Chatelec make and one of Maini make. MNES proposes to provide subsidy for more industrial model BOVs being manufactured by 3 different organisations and passenger model of another organisation. The feasibility of using BOV for short distance is being explored with the help of State Transport Departments and State Nodal Agencies.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

**Recommendation Serial No. 23**

The Committee fail to understand why our country had to lag behind in exploiting the large potential of tidal energy considering the fact that this has been exploited commercially by several countries in the past nearly three decades. A tidal energy power plant of 240 MW capacity is stated to be in operation in France since 1966. It is only now a pre-investment feasibility study has been proposed to

be conducted for establishing a 900 MW tidal power project in the Gulf of Kutch. The Committee would like to be apprised of the anticipated power generation cost and the likely completion schedule of this project if found commercially viable, the Committee stress that efforts should be made to set up such projects in other feasible sites early. Another notable step in the field of ocean energy is signing of a MoU between Tamil Nadu Electricity Board and M/s Sea Solar Power for setting up a 100 MW Ocean Thermal Energy Conversion project by SSP on build-own-operate basis. In view of large potential for power generation and environmental benefits from ocean energy, the Committee feel that there is a great need to give more emphasis to exploit these technologies for power generation at commercial level. The Committee desire that in order to give impetus to the new technology programme adequate funds should be provided on priority basis.

#### **Reply of the Government**

The limiting factor in the execution of this project has been its exorbitant cost. The total cost of the project has been estimated by the National Hydro-electric Power Corporation to be approximately Rs. 6286 crores at May, 1993 price level. The cost of generation per MW is as high as Rs. 5.6 crores again at May, 1993 price level. When compared to conventional modes of power generation (thermal and hydel) this figure is almost double. Furthermore, the price of electricity generated by this project has been estimated by NHPC to be Rs. 7.22 per KWh against at May, 1993 price level. However, Ministry is in the process of inviting technology offers from across the world so that modern foreign technology can be attracted as per the present guidelines of the Government.

The Detailed Project Report on the proposed 100 MW power plant based on OTEC off the coast of Tamil Nadu is awaited from M/s. Sea Solar Power Inc., USA. The matter is being pursued by the MNES. As per the suggestion of the Committee additional funds have been proposed in the BE 95-96.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

#### **Comments of the Committee**

(Please see paragraph 26 of Chapter I of the Report).

#### **Recommendation Serial No. 25**

The Committee note that a demonstration plant of 150 KW capacity was commissioned at Vizhingam near Trivandrum in Oct., 1991 for conversion of wave energy into electrical energy. During the on the spot study visit, the Sub-Committee were informed that the structure originally built for plant has been washed away by a cyclone and that it took 6-7 years to design and built a stable

structure. They have now been successful in finalising the civil engineering design of the structure. The Committee in this connection would like to emphasise that the time lag between successful completion of a research project and laboratory stage and its commercial exploitation should be reduced to the minimum.

#### **Reply of the Government**

The demonstration wave energy plant of 150 KW capacity at Vizhingham (Kerala) is commissioned by Deptt. of Ocean Development. It has been understood that the plant is under trial and improvement stage. However, one proposal has been obtained from M/s. Sea Power AD, Sweden to install floating based wave energy plant of 1 MW capacity near Andamans on Build-Own-Operate basis. The organisations have collected wave data from satellite installation and is in the process of preparation of DPR for sending to MNES.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 26**

The Committee have been informed that the R&D programmes of the Ministry is being reviewed by a Committee to develop a comprehensive R&D strategy with clear cut priorities and goals and appropriate linkages with industry. The Committee will await the outcome of the review and the action taken on its findings. The Committee suggest in this connection that major public undertakings like BHEL should be directed to provide more funds for R&D particularly to new and renewable energy technologies. Private sector should also be asked to include a definite percentage of funds for R&D in their project report for new Industry. The feasibility of including this as a condition before sanction of funds by financial institutions should be examined.

#### **Reply of the Government**

The Ministry constituted a Committee in December, 1993 to review R&D projects of the Ministry and to prepare an Approach Paper to develop a New R&D Strategy for Renewable Energy. The Committee submitted its report in April, 1994 and recommended that the Ministry's efforts to strengthen R&D should be guided by a strategy which should by and large, be industry-driven and goal-oriented. The Committee has also suggested that R&D priorities in each field should be driven from the objectives of respective programmes and should be directed towards specific tasks for achieving improvement in efficiency, cost reduction, enhancement of reliability etc. In order that technology transfer could take place in the most expeditious manner, the involvement of industry should be insisted upon from the very beginning in all applied research projects. The Committee has also stressed

the need to increase the outlay on R&D but to focus on a few well-defined projects both from the short and the long term point of view.

The Committee, apart from its recommendation on the R&D policy, have also identified specific areas of research in each technology. The Report of the Committee was discussed in the second Meeting of Advisory Committee of Ministry of Non-conventional Energy Sources, held on 3rd May, 1994. The Report was accepted by the Advisory Committee.

The Ministry of Non-conventional Energy Sources has constituted an R&D Advisory Committee under the Chairmanship of Dr. Arcot Ramachandran and drawing Experts from R&D institutions, Departments, Industry etc. covering all spheres of renewable energy, as members of this committee. The First Meeting of the R&D Advisory Committee is scheduled to be held on 16th December, 1994.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Comments of the Committee**

(Please see paragraph 31 of Chapter I of the Report)

#### **Recommendation Serial No. 27**

The Committee feel that there is a need for adoption of an integrated approach to propagate renewable energy systems alongwith rural development programme and energy conservation programme.

#### **Reply of the Government**

The Integrated Rural Energy Programme (IREP) has been transferred from Planning Commission to MNES *w.e.f.* 1.4.1994. The Ministry has started implementing the programme and efforts are being made to develop linkages with the programmes of Ministry of Rural Development and Ministry of Power. As per directives received from PMO, an approach paper to develop an operating mechanism for regular coordination on the subject "Integrated Rural Energy Programme" between the Ministry of Non-Conventional Energy Sources, Ministry of Rural Development and Ministry of Power is being prepared by MNES for consideration in the Committee of Secretaries.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]



**Recommendation Serial No. 28**

In order to bring about mass awareness of the renewable sources of energy and their importance the Committee also feel that renewable energy should be introduced as a subject in the school curriculum at various stages.

**Reply of the Government**

The Solar Energy Centre studied the content of science text books in Hindi and English published by the National Council of Education Research & Training (NCERT). These text books are used widely in the country, especially by schools affiliated to the CBSE. The study has revealed that different aspects of the renewable energy are introduced to school children from Class V onwards. The topics covered include the importance of renewable sources of energy, specific technologies such as biogas, wind energy, solar photovoltaics, etc. Students are also being encouraged to make models of solar cookers, and wind mills. Renewable energy gadgets are also becoming increasingly popular in science exhibitions organised by schools. The Solar Energy Centre is sensitizing state education departments about the need to strengthen their school curricula in this subject and also encourage school children to read popular books on the subject even outside their syllabus.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

### CHAPTER III

#### RECOMMENDATION/OBSERVATION WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLY

##### Recommendation Serial No. 15

The Sub-Committee observed that there were discrepancies in the figures of utilisation of funds by the Ministry during the 7th Plan. This was pointed out to the officials of the Ministry during their oral evidence on 27.1.94 and the sitting of the Sub-Committee was adjourned for want of satisfactory clarification from the officials. The Committee observe that the figures furnished after evidence regarding total funds required during the 8th Plan by the Ministry in respect of small hydro, wind power, co-generation and solar thermal programmes do not tally with the breakup of figures. The Committee note with serious concern that the Ministry has not exercised proper care in furnishing information despite the fact that the Secretary, Ministry of NCES asked for another opportunity to furnish the correct figures. It is regretted that the same has not been done even in their later correspondence. This is a serious lapse on the part of the Ministry and they should set things right by furnishing the correct data at the earliest. In the meantime the Committee expects that a proper explanation about the discrepancy would be provided at the earliest.

##### Reply of the Government

The Ministry provided clarification *vide* their letter No. 8/33/93-P&C dated 24.3.1994 on the so-called discrepancy in the table concerning Eighth Plan targets and requirements of funds at the time of factual verification of the Draft report sent by the Committee on Energy branch, Lok Sabha Secretariat. It was informed that:

“the total funds required at Sl. No. 2 is the summation of Sl. No. 4-7. The Sl. No. 3 is the summation of Sl. Nos. 4 and 5. There is no mistake in the table and hence the observation below the table may be removed.”

The clarification provided by the Ministry on this was printed in the Fifth Report of the Committee as 'footnote' on page 7 (just below the original table). However, the observation of the Committee was not removed from the Report and from the Part B—Conclusions and Recommendations of the Committee (Point No. 15), as reproduced above.

**The Ministry has provided the clarification timely and there was no mistake in the table. However, the Ministry will take all care to depict tables more clearly so that no inconvenience is caused to the Committee.**

**[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/9-P&C,  
dated the 17th November, 1994]**

## CHAPTER IV

### RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH REPLIES OF THE GOVERNMENT HAVE NOT BEEN ACCEPTED BY THE COMMITTEE

#### Recommendation Serial No. 11

The Committee observe that the programme relating to solar water heating systems has suffered considerably due to reduction/withdrawal of subsidy during the last two years. The installation of collector area in 1992-93 was just 25,000 sq. m. as against the target of 60,000 sq. m. and in 1993-94 the installation upto the end of December, 1993 was only 17,000 sq. m. as against the target of 55,000 sq. m. In the Committee's view, withdrawal of subsidy in this case is a step in the right direction as it had constrained the market development, product development and after sales service. In order to reverse the present trend and promote the market, the MNES has pleaded for 100% income tax benefit to the user of domestic solar water heating system. The Committee see merit in Ministry's plea as the commercial users already has this incentive. An economic cost-benefit analysis of income tax rebate also shows a net gain to the economy. The Committee therefore, recommend that the question of income tax rebate should be looked into by the Ministry of Finance on a right perspective and the relief sought for be announced at the earliest.

#### Reply of the Government

##### *Solar Water Heating System Achievement During 1993-94*

The market orientation to the programme on Solar water heating systems was given by the Ministry w.e.f. 1.7.93 and the achievements made during 1993-94 as against target allocated was as below:—

Target	Achievement		
55000 m2 (Revised to 35000 m2 in view of fund availability)	40,198 m2	24690 m2	with subsidy
		5555 m2	without subsidy & loan
		9953 m2	with loan from IREDA

As may be seen above, the net achievement exceeded the revised target for the year 1993-94.

As regards income tax rebate to individual for installation of domestic solar water heating systems, MNES had constantly pursued the matter with the Ministry of Finance. Ministry of Finance expressed its difficulty on administrating such a concession. MNES subsequently decided to provide more-liberalized loan scheme with lower interest rates through IREDA for installation of domestic solar water heating under the market oriented scheme.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### Comments of the Committee

(Please see paragraph 17 of Chapter I of the Report)

### Recommendation Serial No. 21

Animal drawn plough and other equipments still remain the mainstay in the field of agriculture and for centuries together no change in their design has been made to improve their effectiveness with the result that draught power of animals is wasted. Since the present wastage is enormous the Committee recommend that institutional support should be provided to organisations like CARTMAN to improve the designs of animal drawn plough and other equipments with a view to reducing the burden on the animals and also to improve the efficiency of equipments.

### Reply of the Government

MNES has been giving financial support to CARTMAN, Bangalore since 1986-87. Eight projects have so far been completed by CARTMAN involving a total cost of Rs. 62 lakhs. Presently, CARTMAN has one R&D project at an estimated cost of Rs. 10 lakhs. MNES continues to provide finance to CARTMAN and other organisations on project to project basis but there has been no provision to provide only institutional support to any organisation including NGOs.

Indian Council of Agriculture Research (ICAR) has informed that ICAR sponsors R&D activities in the area of agricultural machinery including equipment for Draught Animal Power. There are 15 centres of All India Coordinated Research Project (AICRP) located in different regions of the country and 7 centres of AICRP on utilisation of Animal Energy. Besides, Central Institute of Agricultural Engineering, Bhopal is exclusively devoted to R&D on development of Animal Drawn equipments. The institute has published a directory on agricultural machinery enlisting list of manufacturers of the entire Machinery. The Regional Network for Agricultural Machinery (RNAM-ESCAP) has also published development of improved implements for Asian countries including India. The Ministry of Agriculture through their Implements Review and Release

Committee have released more than 23 implements developed by ICAR institutes and agricultural Council is in the process of strengthening proto type fabrication activities at a national level involving a few State Agricultural Universities (SAUs) and ICAR Universities.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

#### **Comments of the Committee**

(Please see paragraph 23 of Chapter I of the Report)

#### **Recommendation Serial No. 24**

In view of the vast potential of ocean thermal energy indicated by the MNES, the Committee suggest that a separate cell may be set up to conduct extensive survey and identify the possible sites to enable exploitation of ocean thermal energy.

#### **Reply of the Government**

Under the New Technology division of MNES, the Ocean Energy Cell has been strengthened. The main objectives of the Ocean Energy Programme are to develop technologies on OTEC, Wave and Tidal energy for power generation and to promote and facilitate the harnessing of energy from Ocean. The Ministry is continuing to provide administrative support to the Projects for harnessing power from wave energy and by OTEC.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

## **CHAPTER V**

### **RECOMMENDATIONS/OBSERVATIONS IN RESPECT OF WHICH FINAL REPLIES OF THE GOVERNMENT ARE STILL AWAITED**

#### **Recommendation Serial No. 2**

The Committee observe that in terms of resources, the trend in allocation of funds to NRSE has been hopelessly poor which largely constrained in the implementation of various programmes. The fund allocations for NRSE over the 7th and 8th Plan periods have been only a small fraction of the total energy sector allocations. Out of the total outlay of Rs. 1,16,230 crores for the energy sector in the 8th Plan, the share of NRSE is less than even one per cent. The Committee are of the firm view that so long as allocations remain at the current level, non-conventional energy will continued to be viewed in terms of playing a marginal role. The Ministry had indicated additional requirement of Rs. 673 crores for budgetary support and Rs. 785 crores under the state plan to achieve the targeted goal in the new Strategy and Action Plan. The Committee feel that there is a strong case for correcting the imbalance in resource allocation for NRSE and accordingly recommend that a beginning in this direction should be made by allocating additional funds needed by the Ministry for implementing the New Strategy and Action Plan in the 8th Plan period.

#### **Reply of the Government**

The Ministry of Non-Conventional Energy Sources has put forward at the time of the Mid-term Appraisal of the 8th Five Year Plan, a strong case for a much higher level of allocations for non-conventional energy sector, in view of the implementation of New Strategy and Action Plan in the 8th Plan period.

At the time of making a detailed presentation on the activities of the Ministry to Hon'ble Prime Minister on 19th April, 1994 the Ministry indicated the level of finances required to implement its revised Action Plan. This was also discussed in the Consultative Committee Meeting of the Members of Parliament, attached to this Ministry held on 24th October, 1994 and it was decided that a Group of Members will meet Prime Minister for emphasizing the need for higher financial allocation to this sector. The Committee also suggested that MOS (NES) may also meet Hon'ble Prime Minister to convey their views. Accordingly, Shri S. Krishna Kumar, MOS (NES) met PM on 1-11-94 and briefed him about the need for additional funds for the Ministry to sustain the new initiatives and programmes

launched by MNES. PM agreed to personally intervene and ensure that additional funds are made available to the Ministry this year.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### **Comments of the Committee**

(Please see paragraph 7 of Chapter I of the Report).

### **Recommendation Serial No. 5 (v)**

In order to bring about additionality of resources, the Committee recommend that co-generation projects in sugar factories be included under the modernisation programme for which sugar development fund provides soft loans to the sugar factories.

### **Reply of the Government**

The matter has been taken up with the Ministry of Food which administering the fund. In a meeting of the Standing Committee of the Sugar Development Fund held under the Chairmanship of Secretary, Ministry of Food, on 11-8-1994, the MNES proposal for inclusion of optimised co-generation as a part of sugar mill modernisation, was included for discussion. Secretary, Food, stated that his Ministry has an open mind on this matter, and requested MNES to bring up a specific proposal covering financial assistance for various eligible elements of the optimised co-generation schemes, for consideration of the Standing Committee. MNES is preparing a suitable Note in consultation with representatives of the concerned agencies.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

### **Comments of the Committee**

(Please see paragraph 11 of Chapter I of the Report).

### **Recommendation Serial No. 5 (vi)**

With regard to the question of 100% depreciation under the Income Tax Rules for equipments used in the micro-hydel projects, the Committee wonder why the Government has not decided this issue so far considering the fact that this concession is already available for major power projects and certain items of non-conventional energy plant and machinery. In order to encourage private sector



participation, the Committee urge that this concession should be extended to small hydro projects without any further delay.

#### **Reply of the Government**

The matter is being continuously pursued with the Ministry of Finance, Secretary, MNES had a meeting with Secretary, Revenue to discuss the matter. The matter is being followed up by MNES. All necessary information have been provided to Ministry of Finance to settle the issue.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C, dated the 17th November, 1994]

#### **Recommendation Serial No. 18**

The Committee note that a Biomass gasification and densification programme for power generation, water pumping and thermal applications has been launched with a target of 100 MW under the new Strategy & Action Plan. About 94 million tonnes of agroresidues and industrial wastes are reportedly not used at all for any purpose annually. Biomass gasifiers opens a vast potential for village electrification in remote and inaccessible areas where Biomass is available in abundance. The Committee feel that this could perhaps be an ideal solution for the electrification of remote villages in hilly areas, inside deep forests and islands.

#### **Reply of the Government**

Under the Biomass Programme, a market-oriented Biomass Gasification Demonstration Programme has been continued for 1994-95 in the following areas of application:—

- i. Water Pumping and Mechanical Applications;
- ii. Electrical and Thermal Applications; and
- iii. Rural Electrification.

Budget provision of Rs. 1.90 crores for installation of biomass gasifier systems of assorted rating in above areas of the application equivalent to 5.0 MW capacity has been made available for Demonstration Programme. The Ministry is providing financial subsidy of 30% for thermal application and 60% for electrical and mechanical applications on Biomass Gasifier systems only.

The New Strategy and Action Plan emphasized on promotion of biomass gasification and biomass densification (Briquetting) and fix a target of 100 MW. Under Biomass Gasification Demonstration Programme, Gasifier systems of various ratings and mode equivalent to 14 MW has been achieved. During the current financial year, a proposed target of 5 MW for biomass gasifiers is likely to

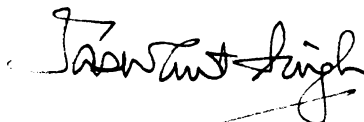
be achieved fully. A target of 6 MW is being proposed to be taken up during next financial year 1995-96 for electrification of hilly, remote villages and meeting thermal energy and power needs of industry. The Ministry is evaluating the performance of existing briquetting plants and planning to undertake broad-based R&D programme involving R&D institutions, manufacturers and users to increase the efficiency of the briquetting units and reduce the operational and maintenance cost etc. and make economical viable technology.

The biomass based power plants scheme for rural electrification at village/taluka level is being formulated by the Ministry to be taken up during current financial year and remaining period of VIII Plan.

[Ministry of Non-Conventional Energy Sources, O.M. No. 9/27/93-P&C,  
dated the 17th November, 1994]

#### Comments of the Committee

(Please see paragraph 20 of Chapter I of the Report).



JASWANT SINGH,  
Chairman,

Standing Committee on Energy (1994-95).

NEW DELHI,  
March 28, 1995  
Chaitra 7, 1917 (Saka)

## APPENDIX I

### MINUTES OF THE SEVENTH SITTING OF STANDING COMMITTEE ON ENERGY HELD ON 24TH MARCH, 1995

The Committee sat from 15.30 hrs. to 16.30 hrs.

#### PRESENT

Shri Jaswant Singh - *Chairman*

#### MEMBERS

2. Smt. Dil Kumari Bhandari
3. Dr. Krupasindhu Bhoi
4. Shri K.P. Reddaiah Yadav
5. Shri Laxminarain Tripathi
6. Shri Bhawani Lal Verma
7. Shri Virender Singh
8. Shri Arjun Singh Yadav
9. Shri Parmeshwar Kumar Agarwalla
10. Shri M.M. Hashim
11. Shri Dipankar Mukherjee
12. Shri Ila Panda
13. Shri J.S. Raju
14. Shri Rajni Ranjan Sahu

#### SECRETARIAT

1. Smt. Roli Srivastava - *Joint Secretary*
2. Shri G.R. Juneja - *Deputy Secretary*
3. Shri A. Louis Martin - *Under Secretary*



## APPENDIX II

(vide PARA 3 OF INTRODUCTION)

*Analysis of Action Taken by Government on the Recommendations contained in the 5th Report of the Standing Committee on Energy (Tenth Lok Sabha)*

I.	Total No. of recommendations made	28
II.	Recommendations that have been accepted by the Government ( <i>vide</i> recommendations at Sl. Nos. 1,3,4,5(i) to 5(iv) and 5(vii), 6 to 10, 12 to 14, 16, 17, 19, 20, 22, 23 and 25 to 28. Percentage of total	22 78.6%
III.	Recommendation which the Committee do not desire to pursue in view of the Government's replies ( <i>vide</i> recommendation at Sl. No. 15) Percentage of total	1 3.6%
IV.	Recommendations in respect of which replies of the Government have not been accepted by the Committee. ( <i>vide</i> recommendation of Sl. Nos. 11, 21 and 24) Percentage of total	3 10.7%
V.	Recommendations in respect of which final replies of the Government are still awaited [ <i>vide</i> recommendation at Sl.Nos. 2,5(v), 5(vi) and 8] Percentage of total	2 7.1%