

F. No. 72/8/2004-VESP
Ministry of Non-Conventional Energy Sources

TEST PROJECTS ON VILLAGE ENERGY SECURITY

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**Guidelines for Planning, Implementation and Funding
of the Test Projects**

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**I. INTRODUCTION**

The Ministry has been implementing a Remote Village Electrification (RVE) Programme since FY 2001-02. Renewable energy technologies such as solar photovoltaics, small hydro, biomass etc. are being deployed for electrification of remote villages and hamlets. The objective of the RVE Programme is to provide access to electricity through renewables to households in remote villages and hamlets, which are not likely to get covered through grid extension. The aim of the test projects is similar except that they would go beyond electrification by addressing the total energy requirements for cooking, electricity, and motive power.

**II. OUTLINE PLAN ON VILLAGE ENERGY SECURITY**

2. An Outline Plan on Village Energy Security has been prepared by the Ministry in association with forestry officials from the Ministry of Environment & Forests and the States. The Outline Plan was prepared with the objective of providing energy security in villages by meeting total energy needs for cooking, electricity and motive power through various forms of biomass material based on available biomass conversion technologies and other renewable energy technologies, where necessary. Modern biomass technologies offer considerable efficiency gains over traditional biomass use. The benefits from such projects can be immense, including employment generation and enhanced incomes to rural households. This can be achieved in an environment friendly and sustainable manner through active and full participation of local communities.

**III. TEST PROJECTS ON VILLAGE ENERGY SECURITY**

3. It has been decided to take up test projects on village energy security with a view to demonstrate the techno-economic parameters of the village energy security plan, provide operational experience, mobilize local communities and firm up the institutional arrangements. The villages for the projects would be selected with a view to provide broad based feedback in the light of inter-regional variations in regard to resource availability, energy requirements and social cohesion among local communities. Maximum demonstration effect would be sought to be derived through coverage in several States in different regions.

4. The test projects would be undertaken in unelectrified remote villages and hamlets that are not likely to be electrified through conventional means.

#### **IV. GUIDELINES FOR PREPARATION OF PROPOSALS FOR THE TEST PROJECTS**

##### **Identification of villages / hamlets**

5. Identification of suitable villages / hamlets, which have a conducive environment for implementation of such test projects is critical for their success. The village / hamlet identified should be remote, and may include a tribal or forest-fringe village / hamlet. The selected village / hamlet should have adequate availability of fallow, common or uncultivated non-grazing land for raising plantations. A cohesive and progressive social structure is also an important requirement. The village / hamlet should have a minimum of 25 and maximum of 200 households and should be identified in consultation with forest, tribal and rural development departments / agencies. After selection of the village / hamlet, a preliminary proposal would have to be prepared, got duly endorsed by the concerned State Nodal Agency and forwarded to the Ministry for consideration of 'in principle' approval.

##### **Preparation of a Village Energy Plan**

6. After receiving 'in principle' approval from the Ministry, a Village Energy Plan will have to be prepared, with active and full participation of the village community. An assessment of the total energy demand should be made, which may include requirements for:-

- Household cooking, lighting and entertainment
- Community, commercial facilities such as shops, streetlights, health centre, school, flour mill, information and communication technology
- Pumping water for drinking, irrigation
- Rural / cottage industry

The minimum energy services to be provided for in any project should include cooking, lighting, street lights, pumping for drinking water supply, lights / fans in the school and primary health center.

An assessment of the biomass resources available locally would have to be carried out. These may include dung, agro wastes, forestry residues, etc. Appropriate fast growing / oil seed bearing tree species should be identified and a plan be prepared for raising the plantations for obtaining wood, vegetable oil and other raw materials. Until the plantations reach an age when annual increments of growth and other raw materials become available, biomass offset from use as cooking fuel and other locally available biomass should be utilized for energy production.

The first option to be explored in the Village Energy Plan should be use of biomass resources. Only if biomass resources are not available or plantations cannot be raised, should utilization of other renewable resources such as mini hydel or solar be explored.

Based on the total energy requirements and the local resource availability, the energy production system would have to be configured. For an energy production system based on biomass, an appropriate technology mix should be selected from available biomass conversion technologies such as:-

- Single / Bi-phasic biogas production using tree based organic substrates, vegetable wastes / residues, vegetable wastes / kitchen wastes, etc.
- Biomass Gasifier coupled with 100% gas engines or dual fuel engines run on bio-fuels in lieu of diesel.
- Stationary diesel engines run on straight vegetable oils or bio-diesel.

If the biomass option has been ruled out for any specific location, mini hydel or solar photovoltaic technologies could be considered.

Electricity distribution should preferably be carried out through a local mini grid. Emphasis should be on energy to be provided for productive activities with thrust on micro enterprise development, backed by micro credit facilities, with a view to facilitating job creation, income generation, increasing the purchasing capacity and reducing the migration from villages.

### **Formation of a Village Energy Committee**

7. Full participation of the village community should be secured from inception. The constitution of a Village Energy Committee should be through the Gram Sabha and got duly notified by the Gram Panchayat as a Sub-Committee or Standing Committee of the Gram Panchayat as per the relevant provisions of the State Panchayati Raj Act and rules in this regard. Care should be taken that the elected Panchayat member/s from that village are ex-officio members of the VEC.

### **Creation of a Village Energy Fund**

8. A Village Energy Fund should be got created under the provisions of State Panchayati Raj Act, initially with beneficiary contributions for sustained operation and management of the project. Subsequent monthly / annual user charges would have to be deposited in this account. Grants from other Government programmes such as rural development, forestry, tribal development, etc., if available, should be placed in this account, to be utilized towards operation and management of the project. The Fund should be managed by the Village Energy Committee with two signatories nominated by the Committee. One of the signatories would be the Gram Panchayat member who is the ex-officio member on the Committee.

9. A separate capital account should also be got created, for receipts towards supply and installation of the energy production units. This Capital Account would also be operated by the VEC in accordance with the same procedure of joint signature and maintenance of accounts, which govern the Village Energy Fund. Both the VEF and the Capital Account of the VEC, being the accounts of the Gram Panchayat under the provisions of the law, would be subject to the processes of accounts maintenance and audit that apply to the Gram Panchayat. Expenditure of funds by the VEC should be disclosed to the Gram Panchayat at its monthly meeting as prescribed under the Panchayati Raj Act and Rules. VEC, being a Sub-Committee of a Standing Committee of the Gram Panchayat would also be under obligation to disclose information in accordance with the Right to Information legislation. It will also be authorized to submit the Utilisation Certificate to the Gram Panchayat, which in turn will submit the Utilisation Certificate to the agency concerned at the district level. Technical facilitation and capacity building through implementing Agencies or Consultants such as NGOs would be focused at the VEC level through the Gram Panchayat.

## **V. GUIDELINES FOR IMPLEMENTATION OF THE TEST PROJECTS**

10. The test projects would be undertaken by the Panchayats duly facilitated by implementing agencies such as DRDAs, forestry departments, NGOs, entrepreneurs, franchises, co-operatives, etc. An implementing agency would forward the proposals for the test projects to the Ministry through the State Nodal Agency. The proposals should, inter-alia, include the following information:-

- (i) Census code number of the village
- (ii) Village Energy Plan
- (iii) Confirmation about setting up of Village Energy Committee and creation of Village Energy Fund
- (iv) Plan for training
- (v) Implementation modalities
- (vi) O&M arrangements
- (vii) Commitment about balance 10% capital cost and funds for operation and management

11. The projects should be owned by the village community with the responsibility for overall operation / management resting with them. However, if necessary the implementation agency may help them for about two years in this activity. During this period, the implementing agency would train local youth in the operation and management of the unit. After this period, the responsibility of operation / management should be undertaken by the Village Energy Committee. The Village Energy Committee may hire / lease out these services to an entrepreneur as a preferred option.

12. The District Advisory Committees on Renewable Energy with the Collectors as the Chairman, Project Director, DRDA as Member-Secretary and comprising district-level functional heads and prominent citizens should be involved in the implementation of the test projects.

13. The concerned State Nodal Agency would have to closely monitor the implementation of the projects and provide monthly progress reports to the Ministry until commissioning. Thereafter, they should forward quarterly reports on performance and other feedback to the Ministry. The Ministry would also carry out intensive monitoring and evaluation of the projects directly as also through independent agencies.

## **VI. GUIDELINES FOR CENTRAL FINANCIAL ASSISTANCE FOR THE TEST PROJECTS**

14. 90% of the capital cost of the test projects would be met through central grant, subject to a benchmark of Rs.20,000/- per beneficiary household for meeting the total domestic and community energy requirements. The balance 10% towards the capital cost would have to be mobilized by the community / implementing agency / State Nodal Agency.

15. Release of the Central Financial Assistance (CFA) towards the capital cost into the designated capital account of the Village Energy Committee would be made as per the following pattern:-

- Initial release alongwith the sanction order - 50%
- Second installment on receipt of equipment at site - 25%
- Final installment after successful commissioning as per contractual obligations and one month operation as per norms - 25%

16. CFA will also be provided towards the following associated costs:-

- The operation, maintenance and management costs would have to be met through user charges for the energy services provided. However, if it becomes critical for the sustainability of the project, financial assistance towards operation, maintenance and management costs will be provided, subject to a maximum of 10% of the capital cost per project. Evidence of serious efforts made to recover user charges would have to be provided.
- Professional charges @ 20% of the capital cost would be provided to the implementing agency for various services from concept to post commissioning, subject to a maximum of Rs.4.0 lakhs per village.
- Service charges @10% of the capital cost, subject to a maximum of Rs. 2 lakh per village would be provided to the State Nodal Agency for monitoring and reporting of progress and feedback on performance.
- Funds for awareness creation, training, seminars, workshops, etc. will be provided on merit on case by case basis.

17. Professional charges to the implementing agency will be released directly to implementing agency as per the pattern of release given in para 14 above; and, service charges to the State Nodal Agency after completion of the project. Release of CFA towards operation, maintenance and management cost would be made as per requirements.

18. Certificate of a project having been successfully implemented and made operational, as per the Sanction Order, shall have to be provided by the State Nodal Agency, after obtaining the same from the Village Energy Committee, before release of the final installment.

19. The Gram Panchayat or the Joint Forestry Management Committee, as the case may be, shall cause all accounts of the Village Energy Committee to be duly audited and sent alongwith the Utilization Certificate in the prescribed format to the State Nodal Agency for being forwarded to the Ministry.

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**FORMAT FOR PREPARATION OF PRELIMINARY PROPOSALS FOR
TEST PROJECTS ON CREATING ENERGY SECURITY IN VILLAGES THROUGH
BIOMASS**

1. Name & Full Address of the Implementing Agency
(Forest Department / DRDA / NGO)
2. Name & Full Address of State Nodal Deptt./Agency
3. Name of Gram Panchayat, Block & District
4. No. of Villages under Gram Panchayat
5. Name of Village / hamlet selected for the Project
6. Village census code
7. Distance from nearest road-head
8. Distance from the grid
9. Total population of the village / hamlet
10. Male / Female ratio
11. Rate of literacy
12. No. of households
13. Number of Hamlets / Dalit Bastis in Village
14. Type of Social Structure
15. Community buildings – school, PHC, panchayat ghar, etc.
16. Main occupation, indicating cash crops
17. Biomass resource availability - type of biomass, local fuel wood / oil-seed bearing species, if any
18. Availability of fallow land / waste land / uncultivated land etc. for energy plantations
19. Availability of water

20. Indicative Estimate of Energy Demand
 - (a) Household – cooking, lighting, other
 - (b) Community services, including streetlights
 - (c) Irrigation/Agriculture Operations
 - (d) Commercial
 - (e) Industrial
21. Existing pattern of energy / fuel use and average monthly expenditure per household
22. Existing renewable energy devices in the village, if any
23. Biomass Technology package proposed to be deployed
24. Indicative capacity of the energy systems
25. Role of local community in planning, implementation and management, including revenue management
26. Details of any local NGO already associated with the village / hamlet
27. Any other information