**Ministry of New and Renewable Energy**
**Bio-energy Technology Development Group**

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To

**Interested Industries/ Entrepreneurs/**
**Consultants/ SNAs/ KVIC/ Institutions/**
**Other Stake-holders**

Subject: **Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio-energy systems and meeting 'Life-line Energy' envisaged in 'Integrated Energy Policy' of Planning Commission.**

Cooking requirement in most of the villages is met by burning biomass in traditional cook-stoves/ chulhas. It leads to health hazards for women and children by cooking in smoky kitchens and the black carbon, carbon mono oxide, carbon dioxide and other gases emitted by burning of biomass in cook-stoves. There is a pressure for reducing black carbon emission from traditional cook-stoves owing to its effect on climate change.

2. 'Integrated Energy Policy' of Planning Commission recommends providing monthly entitlement of 30 units of electricity and 6 kg of LPG or equivalent amount of kerosene for one or both 'Life-line energy' needs. Biogas-fertilizer plants of 1.5 to 2 cubic meter capacity per family are one of the most suitable options for rural areas for supplying the lifeline energy for cooking and lighting. Considering LPG option for providing 'life-line energy' for cooking, the required infrastructure of distribution/ logistics, availability and cost of LPG may not permit to provide LPG to all the households in all the villages of the country.

3. A solution has been conceptualized for meeting 'life-line energy' needs through renewable energy by using cattle dung and loose and leafy biomass, and woody biomass being used in villages in rural and remote areas for cooking food and meeting heat energy requirements. However, any such intervention for providing energy using biomass raises the issue of availability and supply of surplus biomass feed material for biogas plants for providing biogas for cooking and operating biomass gasifier systems for providing electricity as a 'tail-end grid' solution.

4. For the purpose, 'Model Pilot Projects' in about 100 villages are proposed to be taken up for collecting biomass material from various households, already being used in the traditional cook-stoves/ chulhas and providing the households clean biogas fuel in return under a suitable arrangement provided their biomass fuel compensates biogas. For the deficits in providing biomass feed material of equivalent

fuel value the beneficiary may pay for the same at predefined terms. The service provider on the other hand may also agree to provide LPG in case pre-determined biogas quantity is not made available due to seasonal variation or any other reason.

5. The cattle dung/ cattle dung cakes and loose and leafy biomass wastes (agro and forest wastes) collected from the selected village can be processed in biogas plants for generation and supply of biogas back to the households and bio-fertilizer produced from biogas plants as slurry is made available for improving soil-fertility and increasing crop production in the village. The woody biomass collected from the selected village can be processed in biomass gasifiers for generation of producer gas based electricity. The electricity thus generated can be fed to the Village Electricity Grid (VEG) as a 'tail-end grid' solution for electricity supply. Thus, the 'life-line energy' requirement in the village can be met through supply of biomass based biogas and electricity in addition to providing bio-fertilizer produced from biogas plants.

6. This model aims to provide an opportunity to burn the woody biomass at a much superior efficiency as compared to its burning in traditional chulhas and thereby ending in making available surplus biomass. This would also help in reducing shortages of biomass fuel supply to gasifier system which may be installed for providing electricity to the village. The supply of biomass fuel together with non-use of biomass cook-stoves would help in fighting climate change and attaining a cleaner environment in villages free from smoke in addition to reducing health problems of rural folks and generating local employment and decentralized micro-enterprises in rural areas. These micro-enterprises may form confederation of larger corporate bodies or a company.

7. The R&D Policy Guidelines (available on website address http://mnre.gov.in) provide for taking up technology demonstration projects in the area of renewable energy with MNRE support of 50% (excluding cost of land). The capacity of BGFP could be 200, 400, 500, 1000 $m^3$ biogas/ day thereof depending on the availability of suitable biomass feed-materials and cattle-dung. The capacity of biomass gasifier based power generation system could be in the range of 4-20 kW depending on the availability of surplus woody biomass in the village.

8. The Ministry of New and Renewable Energy invites 'Expression of Interest' (EOI) from the public and private sector companies and entrepreneurs who may be interested in partnering with the Ministry of New and Renewable Energy in testing such a model in about 100 villages across the country as a part of an attempt for marching towards creation of smokeless villages in the country and also providing 'life-line energy'. The public and private sector companies can also use their Corporate Social Responsibility Funds (CSR) for the purpose to supplement the financial and fiscal incentives provided by the Ministry of New and Renewable Energy for such projects.

9. In pursuance of the said provisions and 'expression of interest' received so far by the Ministry, proposals are invited for Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy' envisaged in 'Integrated Energy Policy' of Planning Commission. The MNRE support of 50% can be made available for taking up such technology projects. Balance 50% of the cost of the project is required to be invested/ mobilized by the entrepreneur/developer. At least 20% of the cost of the project is to be met by the entrepreneur/ user agency in case loan is availed from banks/ financial institutions. However, for successful

implementation of the project the banks/ financial institutions may sanction 80% of the cost of the project and MNRE share is credited to the account, as and when released, after installation and successful commissioning of the plant(s). These projects are to be taken up on Built, Own and Operate (BOO) basis by promoters/ entrepreneurs.

10. These projects are proposed to be implemented in association with the State Nodal Agencies, IREDA and Biogas Development Training Centers (BDTCs) associated with the National Biogas and Manure Management Programme (NBMMP). The BDTC, IIT Delhi, has been designated as lead BDTC for providing technical assistance and monitoring of such projects for obtaining feed-back for further improvement in the 'techno-commercial package'.

11. The interested industries/ entrepreneurs/ SNAs/ institutions may prepare Feasibility-cum-Detailed Project Report (FDPR) for taking up such projects in a prescribed format attached at Enclosure-I & II. Specific guidelines and General guidelines to be considered for preparation of FDPRs are attached at Enclosure-III and Enclosure-IV. Format for registration of consultants is given at Enclosure-V. Specific Terms & Conditions and General Terms & Conditions are also given at Enclosure-VI and VII. Ten nos. of hard copies of FDPRs along with 3 nos. of electronic copies/ CDs may be sent to Adviser (BE), Ministry of New and Renewable Energy, 14, C.G.O. Complex, Lodhi Road, New Delhi – 110 003.

12. The proposals are proposed to be evaluated by experts and considered by Technology Demonstration Appraisal Committee of the Ministry. Recommended projects are to be implemented, operated and owned by the concerned industries/entrepreneurs/ project developers. The project proposals may be submitted at the earliest with a copy to the concerned SNA and BDTC.

**(Dr. A. R. Shukla)**
**Adviser (Bio-Energy)**

**Enclosure-I**

# Feasibility-cum-Detailed Project Report (FDPR)

**for**

_____

***by*** _____

_____

# Contents

# Proposal at a Glance and Check-list

# I. Proposal at a Glance

1. **Name of the Organization:**

2. **Address**: (i) Office:
(ii) Plant:

3. **Constitution:**

4. **Date of Establishment:**

5. **Promoters:**
(Proprietors/ Partners/ Directors): (i)

(ii)

(iii)

6. **Proposed Installed Capacity:**

**A. Biogas for Cooking and Power generation for captive use/ local distribution**

(i) Biogas generation capacity:
(ii) Bio-fertilizer/ Manure Production:

**B. Biomass Gasification based Distributed/ off-grid Power Generation**

(i) Capacity (kW): -
(ii) Electricity generation per day (kWh): -

7. **Production from the Project (per year)**

| Sl. No. | Product | Quantity (kg) | Value (Rs. in lakh) |
|---|---|---|---|
| | **Biogas** | | |
| i) | Raw Biogas generation | | |
| ii) | Purified Biogas generation (____% of methane) | | |
| iii) | Purified $CO_2$ generation | | |
| iv) | Bio-fertilizer/ manure Production | | |
| | **Biomass Gasifier** | | |
| i) | Raw Producer gas generation | | |
| ii) | Purified Producer gas generation | | |
| iii) | Electricity Generation (kWh) | | |

8. **Consultant/ Suppliers:**
i) Name of Consultant:
ii) Technology Provider:
ii) Main Suppliers of Equipment:

**9. Project Cost:**

**(Rs. In lakh)**

| | |
|---|---|
| Land * | |
| Site Development | |
| Buildings & other Civil works | |
| Plant & Machinery** | |
| Electrical Installation | |
| Misc. Fixed Assets | |
| Preliminary & Pre-Operative Expenses | |
| Provision for Contingencies | |
| Initial Working Capital | |
| Feasibility-cum-DPR preparation cost | |
| Consultation fees | |
| One year operation and maintenance | |
| Total | |

* Not to be supported

** Should also include the biogas utilization option (electrical generator/ compression system/ blowers/ vehicle engine change over kits/ cylinders) and manure packaging, enrichment facilities.

**10. Means of Finance:**

(Rs. in lakh)

| | |
|---|---|
| 1. Promoter's contributions | |
| 2. Other Sources (Please specify) | |
| 3. User Agency contribution | |
| 4. Term Loan | |
| 5. MNRE assistance | |
| Total | |

**11. Term Loan:**

Rate of Interest ……%
Repayment period …… Years
Moratorium …… (Period)

Working Capital (Requirement & Source): Rs…….. lakh

**12. Annual Input Requirement (at Optimum Capacity) (Rs. in lakh)**

i) Raw Material:
ii) Power:
iii) Water:
iv) Manpower:

**13. Implementation Schedule:**

i) Name of the implementing agency:
ii) Implementation Period:
iii) Schedule date of commission:

**14. <u>Salient Projected Performance Data:</u>**

| | Years | | | | |
|---|---|---|---|---|---|
| | I | II | III | IV | V |
| Capacity Utilization % | | | | | |
| Production | | | | | |
| Turnover Rs. in lakh | | | | | |
| Gross / Operating Profit " | | | | | |
| Profit before Tax " | | | | | |
| Profit after Tax " | | | | | |
| Cash Profit " | | | | | |

i) D.S.C.R. (Debt service coverage ratio):

ii) B.E.P. (Break-even point):

iii) Pay-back period:

iv) IRR (Internal rate of return):

**15. Supply of Cooking gas/ Electricity:**

| **Sl. No.** | **Item** | **Connections** | | **Period** | **Total hours** | **Total Capacity** | |
|---|---|---|---|---|---|---|---|
| | | No. | Capacity | | | cu. mtr. | kWh |
| 1. | Cooking | | | | | | ---- |
| 2. | Electricity | | | | | ----- | |

**16. Details of Power Distribution Network (PDN):**

**17. Strategy for operation and maintenance:**

# II. Check-list for Feasibility-cum Detailed Project Report (FDPR)

The interested promoter should submit a Feasibility-cum-Detailed Project Report (FDPR) covering following aspects:

1) Availability of raw materials and tie up (MOU document)/ willingness certification including Consent from Gram Panchayat/ Local government.
2) Availability of land and tie up (Lease document)/ willingness certification
3) Organization type and structure like (Entrepreneur/ Proprietary, Private limited, Entrepreneur/ Public limited, Co-operative, NGO etc.
4) Brief project description
5) Tie up with technology, equipment suppliers and provide performance
6) Financial analysis and profitability study.
7) Incentives, concessions expected from other Government and public bodies for demonstration and future multiplications.
8) Initial contribution in terms of finance, technology development, technical and equipment tie up by the promoter and user agency (mention separately).
9) Organizations to operate and maintain the demonstration project.
10) Organization to replicate the project in a specific region or throughout India.
11) Fulfilment of statutory requirements (like PCB clearance, environmental clearance/ safety, PESO, Electrical inspector, local authority etc).
12) Bank/ Financial institution Consent/ Sanction letter.
13) Undertaking for operation and maintenance of the plant for 15 years after installation and commissioning.
14) Infrastructure facilities by way of additional accommodation, water, electricity, communication etc. and additional expenditure, if any, for smooth implementation and operation of the project for at least 15 years is to be met by the project promoter(s) at their cost.
15) Promoter to give undertaking that the plant would not be dismantled/ sold without prior permission in the event of plant becomes non-functional.
16) Undertaking regarding completion of the project within the approved time duration.
17) Undertaking regarding fulfilment of terms and condition given in MNRE Letter No.5-59/2009-BE dated 09.04.2010.

# Part-I:
# General Information

## General Information

1. Proposed Capacity of the Project (on daily basis):

   i) Quantity of biomass to be processed _____MT
   ii) Raw Biogas generation: _____$m^3$
   iii) Purified Biogas generation (___% of methane): _____kg
   iv) Purified $CO_2$ generation _____kg
   v) Bio-Fertilizer/ manure Production: _____kg
   vi) Raw Producer gas generation _____$m^3$
   vii) Purified Producer gas generation _____kg
   viii) Power Generation:
      i. Through Biogas: _____kWh
      ii. Through Biomass Gasification _____kWh

2. Project Promoter
   i) Type of organization and structure:
   ii) Registration Number:
   (Please attach an attested copy of the registration)
   iii) Place of registration:
   iv) Date of registration:
   v) Income tax number:
   vi) CST No. (If applicable):

3. Proposed location of the Project:
   i) Village: _____
   ii) Taluka: _____
   iii) District: _____
   iv) State: _____
   v) Telephone: _____
   vi) Fax: _____
   vii) E-mail: _____
   viii) Type: _____Electrified/ Non Electrified_____
   ix) No. of Household _____

4. Accessibility to proposed location of the Project

| Sl.No. | Particulars | Name | Distance from Project Site (km) |
|---|---|---|---|
| 1. | Nearest Tehsil/ Block | | |
| 2. | Nearest Road Head | | |
| 3. | Nearest Railway Station | | |
| 4. | Nearest Airport | | |
| 5. | Nearest Grid/Substation | | |
| 6. | Location Electrified/ un-electrified | | |

5. Special Category if any - Location based:

| Tick as applicable | | | | | | |
|---|---|---|---|---|---|---|
| NE States & Sikkim | Islands & Estuaries | Hilly Areas | Jammu & Kashmir | Deserts | Newly formed states | Not applicable |

6. Details of proposed Project Land (Please tick appropriate):

| Sl. No. | Particular | Area | Acquired** | Whether land can be pledged for mortgage* |
|---|---|---|---|---|
| 1. | Govt. Land | | | |
| 2. | Panchayat Land | | | |
| 3. | Private Land | | | |
| 4. | Forest Land | | | |
| 5. | Other Specify | | | |
| 6. | Total | | | |

* (In case of Govt. Land is not mortgagable, please enclose letter permitting such pledging from the concerned Govt. Authority)

** Enclose a copy of allotment/ acquisition/ purchase letter/ agreement.

# Part-II:
# Technical Component

**Part-II: Technical Component**

**1. Biogas/ Producer gas generation**

**1.1 Availability of Cattle dung/ non-woody feed materials/ other Feed-stocks/ Woody Biomass**

1) Identification of raw material like Cattle dung, biomass, de-oiled cake, poultry or other waste , food and market waste, sewage any other
2) Collection, transport, storage, shelf life requirement

**Table-I: Details of the average Cattle dung/ biomass feed-materials available for the Plant**

| Sl. No. | Feed Materials | Availability (Tonnes per day) | (Tonnes per year) |
|---|---|---|---|
| 1. | Cattle dung | | |
| 2. | Non-woody biomass feed-materials for biogas generation:<br>i) Agricultural residue (please specify)<br>ii) Agro-industrial by-products / wastes<br>iii) Non-edibles Deoiled Cakes (please specify)<br>iv) Kitchen waste<br>v) Abattoir waste | | |
| 3. | Feed-stock for Producer gas generation:<br>i) Woody Biomass<br>ii) Rice Husk<br>iii)Any other biomass other than the one suitable for biogas generation | | |
| | Total: | | |

**1.2 Pre-treatment/ Slurry/ Woody Biomass Preparation and handling**

i) No. of days of treatment to be mentioned for each of the feed-material types:
ii) Estimated requirement of each feed-material per cubic meter of raw biogas:
iii) Slurry consistency and dilution water requirement.
iv) Possibility of water recycling.
v) Size reduction.
vi) Type: - mechanical, manual, water and power requirement.
vii) Slurry charging: manual, mechanical power, manpower requirement
viii) Special equipment for size reduction for slurry (shredder, Pulveriser) preparation and handling, pumping, availability of equipments indigenous, imported.
ix) Drying/ Seasoning of Woody Biomass for gasifier.

## 1.3 Biogas Digester design and sizing suitable for multi-feed stock and suitable type of Biomass Gasifier

**Biogas**

i) Biogas Digester retention time:
(Hydraulic retention time (HRT)/ Solid retention time (SRT):
ii) Type of high rate bio-methanation digester.
iii) Biogas Digester Model: - USAB, Modified UASB, Completely mixed, Fixed bed, Plug flow, CSTR, (BARC-NISARGRUNA), any other.
iv) Biogas Digester retention time (HRT)
v) Ability of biogas digester to handle different raw materials
vi) Special design manufacturing, operation and maintenance requirement for biogas digester.
vii) Indigenous availability, import requirement for biogas system.
viii) Specific design, operation maintenance requirement for biogas system.
ix) Specific advantages over conventional design for biogas digester.

**Biomass Gasifier**

i) Biomass Gasification Project Type (100% Gasification / dual fuel mode)
ii) Type of Biomass Gasifier.
iii) Size of Biomass Gasifier.
iv) Gasifier Model.
v) Efficiency of Gasifier.
vi) Burner Type.
vii) Consumption rate of raw material.
viii) System Failure rate.
ix) Average load for long-term operation.

## 1.4 Biogas Storage

i) Inbuilt in digester or separate storage
ii) Type- floating dome, fixed dome, flexible membrane, any other
iii) Special material requirement and availability (including infrastructural needs)
iv) Expected Life time of the storage facility
v) Cost effectiveness of storage.

## 2. Biogas Purification/ Enrichment Technology

i) Water scrubbing – using high/ low pressure
ii) Biological scrubbing
iii) Chemical scrubbing
iv) Membrane separation
v) PSA, Molecular sieves
vi) Any other
vii) Quality of upgraded gas
viii) Utilities, chemicals or any other requirement
ix) Availability of technology, Indian, imported.

**3. Producer gas Purification and Cleaning Technology**

i) Cleaning Technology
ii) Cooling Technology

**4. Biogas Utilization**

i) Bottling/ Cylinder filling, Piped distribution, balloon, Cooking & heating fuel, Pressure/ compressed storage, any other
ii) Power generation for captive utilization: 100% biogas/dual fuel genset, 100% biogas/ dual fuel pump set, grid connectivity, paralleling with grid, other power generation source conventional, renewable, any other
iii) Vehicle fuel: - upgrading requirement, gas composition and storage, distribution
iv) Any other

**5. Post Treatment of Digested Slurry**

i) Dewatering and recycling system
ii) Drying, Manual management
iii) Mechanical, Pneumatic concentration
iv) Composting- vermi, mechanical
v) Value addition and packaging

**6. Utilization Technology for Ash produced from Biomass Gasifier System**

i) Ash utilization technology and disposal.
ii) Liquid, solid and other types of waste disposal systems following pollution norms.
iii) Charcoal Usage.

**7. Biogas Distribution**

i) Pipeline
ii) Low pressure cylinder
iii) High pressure cylinders

**8. Utility Requirement**

i) Captive Power (in house/ outside)
ii) Water
iii) Power for Income generation activity (Water pumping, Flourmills etc).
iv) No. of Domestic House Hold connections and Commercial connections.
v) Any other

**9. Chemicals and other Requirements**

i) Nutrients
ii) Flocculants and additives
iii) Culture (anaerobic, aerobic)
iv) Chemicals for PSA tech.
v) Any other

**10. Land Requirement**

To be specified.

**11. Operation and Maintenance requirement**

i) Operation and maintenance Manuals*
ii) Spares and tools tackle requirement

iii) Availability of spares
iv) Training facility
v) Servicing set up and facility

* ISO certification of the technology will be given an additional weightage

**12. Estimated cost of Biogas-Fertilizer Plant and Biomass Gasification Plant**

**Table - II**

| Sl. No. | Item | Estimated cost: (Rs. In lakh) |
|---|---|---|
| 1. | Pre-treatment system | |
| 2. | Biogas generation | |
| 3. | Biogas storage | |
| 4. | Biogas Purification | |
| 5. | Biogas Bottling | |
| 6. | No. and cost of cylinders | |
| 7. | 100% Biogas/ dual-fuel engine/ generator (please specify capacity) | |
| 8. | Compressor, shredder, palvasiser | |
| 9. | Slurry dewatering, handling and re-circulation | |
| 10. | Vermi composting | |
| 11. | Slurry drying unit | |
| 12. | Bag sealing machine | |
| 13. | Machine Room (please specify: dimensions) | |
| 14. | Biomass Gasifier System | |
| 15. | Producer gas generation | |
| 16. | Producer gas purification | |
| 17. | Producer gas storage | |
| 18. | Equipments used for supplying electricity (give details) | |
| 19. | Details of the design of the plant and bill of materials for construction* of plant, machinery/ equipment and accessories | |
| 20. | Any other | |

* The rates considered for civil construction component (earth work, bricks, cement, sand, morrum, stones, skilled/ unskilled workers, Ac pipe, pipes and fittings, electrical components, mechanical components, etc.) to be as per the State Government schedules of rates or district schedule of rates.

# Part-III:
# Commercial Component

**Commercial Component for Development of project on "Demonstration of 'Integrated Technology-Package on Medium-size Biogas-Fertilizer Plants (BGFP) for Generation, Purification/ Enrichment, Bottling and Piped distribution of Biogas towards harnessing 'Near Total Potential of suitable Biomass in Rural Area**

## 1. Project Cost

1.1 Cost of Land
1.2 Cost of Land Development
1.3 Building Cost
1.4 Cost of Plant and Machinery
1.5 Miscellaneous Fixed Assets
1.6 Pre and post Operative Expenses
1.7 Provision for contingencies
1.8 Margin of Working Capital
1.9 Cost of non-woody biomass feed-materials/ Woody Biomass/ other feed-stocks
1.10 Manpower cost
1.11 Cost of Captive Power
1.12 Cost of Water

## 2. Means of Finance

(Rs. in lakh)

| | | |
|---|---|---|
| 1. | Promoter's contributions | |
| 2. | Other Sources (Please specify) | |
| 3. | User agency assistance | |
| 4. | Term Loan | |
| 5. | MNRE assistance | |
| | Total | |

## 3. Conclusion

## 4. Annexures

**Annexure-I**

## Building, Civil works & Water Supply

| S.No. | Particulars | L x B | Area (sq.ft.) | Estimated Cost of Construction (Rs. in lakh) |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| | **Total** | | | |

**Annexure-II**

## List of Plant and Machinery

**Amount (Rs. in lakh)**

| S.No. | Particulars | Qty. | Supplier's Name | Basic Cost | Excise Duty | CSTN at | Transpo rtion | Total |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| | | | **Total Rs.:** | | | | | |
| | | | **Rounded to** | | | | | |

**Annexure–III**

## Calculation of Manpower Cost

| S.No | Particulars | Nos. | Salary per person per annum | Total Salary per annum |
|---|---|---|---|---|
| 1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7.<br>8.<br>9. | Manager<br>Accountant<br>Plant Operator<br>Skilled Workers<br>Semi-Skilled Workers<br>Electrician<br>Office Assistant<br>Office Boy<br>Any other | | | |
| | **Total: -** | | | |
| **Add ……% towards other benefits like PF, ESI, Bonus, etc.**<br><br>**Rounded to ……..lakh** | | | | |

**Note: The categories of staff given herein above are illustrative, it may be modified according to the actual requirement.**

**Annexure – IV**

## Working Capital Calculation

| | | | Years | | | | (Rs. in lakh) |
|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Particulars** | **Days** | **I** | **II** | **III** | **IV** | **V** |
| **1.** | **Raw materials** | | | | | | |
| **2.** | **Stores and consumables** | | | | | | |
| **3.** | **Finished products** | | | | | | |
| **4.** | **Receivables** | | | | | | |
| **5.** | **Loans & Advances** | | | | | | |
| **6.** | **Other Current Assets** | | | | | | |
| | **Total** | | | | | | |
| **7.** | **Less: Sundry Creditors** | | | | | | |
| | **Provisions** | | | | | | |
| | **Sub Total** | | | | | | |
| **8.** | **Net Current Assets** | | | | | | |
| **9.** | **Own Margin** | | | | | | |
| **10.** | **Bank Loan** | | | | | | |
| **11.** | **Interest on Working Capital** | | | | | | |

**Annexure-V**

# Statement of Profitability Projections

| | | | | Years | | | | |
|---|---|---|---|---|---|---|---|---|
| **S. No.** | **Particulars** | **Basis** | **Foot Note** | **I** | **II** | **III** | **IV** | **V (Year)** |
| 1. | **Installed Capacity** | | | | | | | |
| | Name of the products | | | | | | | |
| | No. of working days | | | | | | | |
| | No. of Shifts | Nos. | | | | | | |
| | Capacity Utilisation | Nos. | | | | | | |
| | Estimated Production | % | | | | | | |
| | Estimated Sales: (Itemwise) | | 1. | | | | | |
| | 1. | | | | | | | |
| | 2. | | | | | | | |
| | **Total Revenue** | | | | | | | |
| 2. | **Direct Expenses** | | | | | | | |
| | Raw Material | | 2 | | | | | |
| | Consumables/ Packing Materials | | | | | | | |
| | Salary & Wages (….% increasing yearly) | | | | | | | |
| | Power | | 3 | | | | | |
| | Repairs & Maintenance | | | | | | | |
| | Other Direct Expenses | | | | | | | |
| | Department (Under SLM) | L.S. | 4 | | | | | |
| | Depreciation | | | | | | | |
| 3. | **Total Direct Cost** | | | | | | | |
| | Add: Opening Stock of – | | | | | | | |
| | Work-in-Progress | | | | | | | |
| | Finished Goods | | | | | | | |
| | Sub Total | | | | | | | |
| | Less: Closing Stock of – | | | | | | | |
| | Work-in-Progress | | | | | | | |
| | Finished Goods | | | | | | | |
| | Sub Total | | | | | | | |
| 4. | **Operating Profit** | | | | | | | |
| | Administration Expenses | | | | | | | |
| | Operation & Maintenance | | | | | | | |
| | Selling & Distribution (% of sales) | | | | | | | |
| | Interest on Team Loan | | 5 | | | | | |
| | Interest on Working capital | | 6 | | | | | |
| | Sub Total | | | | | | | |
| 5. | | | | | | | | |
| 6. | **Net Profit Before Tax** | | | | | | | |
| 7. | **Income Tax Liability** | | 7 | | | | | |
| 8. | **Profit After Tax [E-F]** | | | | | | | |
| | **Cash Accruals** | | | | | | | |

**Note: For Calculation of major items of Profitability Essentials, detailed calculations for individual items may be enclosed by way of footnotes, as per requirement of individual case**

**Annexure–VI**

# Cash Flow Statement

| | | | Years | | | | (Rs. In Lakh) |
|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Particulars** | **Const. Period** | **I** | **II** | **III** | **IV** | **V** |
| **1.** | **Sources Funds**<br>Net Profit before tax with Interest Added Back<br>Capital<br>Grant in Aid<br>Unsecured Loan<br>Term Loan<br>Increase in Bank Loan<br>Depreciation | | | | | | |
| | **Total Funds Available [A]** | | | | | | |
| **2.** | **Application Of Funds**<br>Fixed Assets<br>Increase in Current Assets<br>Repayment of Term Loan<br>Interest on Term Loan<br>Income Tax Liability | | | | | | |
| | **Total Funds Used [B]** | | | | | | |
| **3.** | **Opening Balance of Cash[C]** | | | | | | |
| **4.** | **Net Surplus/ (-) Deficit [D] [A-B]** | | | | | | |
| **5.** | **Closing Balance [C+D]** | | | | | | |

**Annexure–VII**

## Calculation of Debt Service Coverage Ratio

| | | | Years | | | | (Rs. In lakh) |
|---|---|---|---|---|---|---|---|
| **S.No.** | **Particulars** | **Total** | **I** | **II** | **III** | **IV** | **V** |
| **1.**<br>**2.**<br>**3.** | **Profit after Tax**<br>**Depriciation**<br>**Interest on Term Loan** | | | | | | |
| | **Total (A)** | | | | | | |
| **1.**<br>**2.** | **Interest on Term Loan**<br>**Installment of Term Loan** | | | | | | |
| | **Total (B)** | | | | | | |
| | **Debt Service Coverage Ratio (A/B)** | | | | | | |

- **Internal Rate of Return (IRR) (Calculation to be given)**
- **Pay-back period**

**Annexure-VIII**

## Calculation of Break-Even Point based on Optimum Capacity Utilization

**(Rs in Lakh)**

| S.No. | Particulars | Amount |
|---|---|---|
| 1. | **Total Revenue** | |
| 2. | **Variable Expenses**<br>Raw Material<br>Consumables/ Packing Material<br>Salary & Wages (…..% increase yearly)<br>Power<br>Repair & Maintenance<br>Other Direct Expenses<br>Selling Expenses | |
| | **Total Variable Expenses** | |
| 3. | **Contribution [A-B]** | |
| 4. | **Fixed Costs:**<br>Administration Expenses<br>Interest on Term Loan<br>Depreciation (Under SLM) | |
| 5. | **Total Fixed Cost** | |
| 6. | **Break-Even Point in (%)**<br>(Fixed Cost/ Total Contribution) X 100 | |

**Annexure – IX**

## PROJECTED BALANCE SHEET FOR 10 YEARS

(Rs in Lakh)

| Sl. No | PARTICULARS | I | II | III | IV | V |
|---|---|---|---|---|---|---|
| | | | | (Year) | | |
| 1, | Liabilities: | | | | | |
| (i) | Capital | | | | | |
| (ii) | Subsidy/ Grant-in-aid | | | | | |
| (iii) | Profit & Loss Account | | | | | |
| (iv) | Term Loan | | | | | |
| (v) | Sundry Creditors | | | | | |
| (vi) | Other Current Liability | | | | | |
| | **Total Liabilities** | | | | | |
| 2. | Assets: | | | | | |
| (i) | Fixed Assets (gross) | | | | | |
| | Less: Depreciation | | | | | |
| | Net Block | | | | | |
| (ii) | Current Assets: | | | | | |
| | Raw Material | | | | | |
| | Stores & Consumables | | | | | |
| | Finished Goods | | | | | |
| | Receivables | | | | | |
| | Loans & Advances | | | | | |
| | Other Current Assets | | | | | |
| | Cash & Bank Balance | | | | | |
| | Sub Total | | | | | |
| | **Total Assets** | | | | | |

**Enclosure – II**

**Indicative points to be covered in the Detailed Project Reports (DPR) for biomass gasifier based off grid / distributed power generation projects (>100 kW)**

## Part 'A': Preparation of FDPR

The Detailed Project Report (DPR) should provide information on the following aspects:

1. Demand – Current and expected (tentative).
2. Load management – Load chart preparation taking into account seasonal variations in use of electricity, especially for irrigation etc.
3. Plant sizing - Sizing of the plant, capacity utilization factor for the plant as per the load chart.
4. Technological options – (Gasification / Biomass-Turbine–Generator (BTG) taking into account load pattern, capacity utilization factor and type of biomass fuel available.
5. Project Details
    a. Proposed Installed capacity (kW)
    b. Cost of the project (As approved by FIs if loan is tie up)
        i. Civil Works
        ii. Plant & Machinery
        iii. Misc. Equipment
        iv. Pre-operative expenses & Others
    c. Anticipated commissioning schedule
6. Project cost estimates and financial calculations. Costs details of each item, i.e., equipments, power distribution network, civil work etc.
7. Details of Power Distribution Network (PDN) along with a drawing indicating types and no. of poles, length, specifications of the wires, fixtures, service lines from pole to the households and inside house wirings etc.
8. Proposed system, energy balance etc.
9. Technical specifications of each of the system/equipment proposed.
10. Sources of biomass – current and potential, its stability
11. Proposed Fuel Linkages mechanisms.
12. Financing plan – Capital expenditure for power plant and other investments needed to reach projected demand. Sourcing working capital, sources of revenue, tariff setting, other non-tariff sources of revenue, operational sustainability, cash flow statement, plan to meet revenue gap if any, pay back period.
13. Utilities & maintenance facilities – power, water, biomass storage & handling etc.
14. Environmental aspects
15. Human resources – Community empowerment, involving them in ownership and decision-making, training in operation and management of the power plant.
16. Strategy for operation and maintenance of electricity generating system and other systems and devices, economics of operation and maintenance Risk management – Identification of risk and how it would be managed.
17. Project implementation plan – Tasks and milestones with timelines and clear identification of responsibilities should be presented.

18. Details of cost of energy/electricity generation, tariff to be charged, revenue collection from the beneficiary households, revenue and expenditure gap, if any, and the mode of filling up this gap. The net proposed payment from the each household must be clearly indicated.

## Part 'B': Indicative Proforma- Verification Check list

| | | | |
|---|---|---|---|
| **1** | **Project File No. and date of in-principle approval** | | |
| **2** | **Name & address of the Developer** | | |
| **3** | **Location of the system (Full address)** | | |
| | | **Approved** | **Verified** |
| **4** | **Project Type (Gasification / BTG)** | | |
| | Captive Generation in Rice Mills | | |
| | Off grid / Distributed power for villages | | |
| | Grid Connected Project or Combination with captive / distributed / grid | | |
| **5** | **Biomass** | | |
| | Rice Husk | | |
| | Wood | | |
| | Other Agro residues (give details of agro residues) | | |
| | Multiple Biomass (give details of other biomass) | | |
| **6** | **Project Type** | | |
| | 100% Gasification / BTG | | |
| | Dual fuel | | |
| **7** | **Gasifier Supplier Name and Address** | | |
| **8** | **Gasifier / BTG Capacity (kW)** | | |
| **9** | **Machine number of Gasifier, producer gas engines / turbine / generator set (as provided by the manufacturer)** | | |
| **10** | **Load (kW)** | | |
| **11** | **Engine / turbines manufacturer** | | |
| **12** | **Rating of the engine / turbines (kVA)** | | |
| **13** | **Date of commissioning** | | |
| **14** | **Total Project Cost (Lakhs) Indicate cost of gasifiers, engine, turbines etc** | | |
| **15** | **Amount of CFA (Lakhs) sanctioned** | | |
| **16** | **O&M as per logs** | | |
| | Hours of operation | | |
| | Amount of biomass / rice husk consumed per unit | | |
| | Number of filters changed in a month | | |
| | Shutdowns in the last three months | | |
| | Revenue collected during last two - three months | | |
| | Training to operators (by manufacturer): Duration of training ***On O&M*** | On site | External |
| | Duration of training: ***On Safety aspects*** | | |
| **17.** | Attach original Commissioning Report, Utilization certificates and audited statement of expenditure (as per proforma). | | |
| **18.** | Verified operation of project at least a period of one month through log book or other supporting documents. | | |
| **19** | Verified agreement between the user and supplier of the gasifier systems for full guarantee and warrantee for one year followed by AMC for two years | Attach copy | |
| **20** | Support towards project formulation – Indicate Name & Address, Account No of the promoter complete details of Bank & Branch Name with address, Branch Code, RTGS Code, | | |
| Gasifier system and sub-system (including equipments and instruments) have been verified at site and functioning satisfactorily as per terms & reference of the grant | | | |
| Signature of authorized independent verification authority | | | |
| Date / Place: | | | |

## Part 'C': INDICATIVE FORMAT FOR JOINT COMMISSIONING REPORT (JCR) BIOMASS GASIFIER BASED DISTRIBUTED / OFF-GRID / GRID POWER GENERATION PROJECTS

| Reference MNES in-principle approval Letter No. & Date | Users Name & Address | Name of Manufacturer / Supplier | Rating / capacity of systems, both for gasifier and engines kW / KVA | Mode of application | Machine No. | Date of Commissioning | Amount of CFA |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | | | | | |

Certified that:

i. Training on operation and maintenance and safety aspects has been given adequately to users/ operators of the Institutes/Organizations concerned.

ii. Operating manuals, warranty card etc. have been provided to the Institute/ Organization concerned.

iii. Undertakings for the regular operation & maintenance of the systems have been obtained from the concerned Institute/Organization.

iv. Gasifier system and sub-system (including equipments and instruments) have been verified at site and functioning satisfactorily as per terms & reference of the grant.

v. Verified operation of project at least a period of one month.

vi. Verified agreement between the user and supplier of the gasifier systems for full guarantee and warrantee for one year followed by AMC for two years

Name & Address of the Manufacturer / Supplier with seal

User Name & Signature

Signature of authorized verifying authority

Date: Place:

**Enclosure-III**

**Specific Guidelines to be considered for preparation of FDPRs on Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy' are given below:**

1. Demonstration may be taken up in generation purification & bottling all the potential States and regions of the country in order to maximise biogas generation, purification & bottling, bio-fertilizer production and power generation over a period of time.

2. Demonstration projects may be taken up for different types of feed-materials and different types of establishments/ organizations so as to collect data and information, which may be useful in formulating standardised techno-commercial packages.

3. Full cost for preparation of Feasibility-cum-Detailed Project Report (FDPRs) subject to a maximum of Rs.1 lakh may be provided by MNRE after the same has been accepted and project is sanctioned.

4. Cost of land is to be excluded while considering total cost of the project for MNRE support.

5. Cost of equipment for captive power generation for operation of the plant may be included in order to make the project independent of availability of electricity at the project site and to prove that the project is also self-sustainable in captive energy terms. The cost of equipment for monitoring of key performance indicators may also be included.

6. The promoters who are able to mobilise 50% of the cost of the project through their own resources shall be considered for support.

7. In cases where loans are being taken from banks/ financial institutions at least 20% of the cost of the project is to be borne by the promoter/ user agency.

8. It may be useful in the long run for better success of the project if the user agency also becomes a partner in the project and sign an agreement with the promoter for providing biomass/ cattle dung, etc. as feed-materials for the plant and appropriately sharing the outputs in the form of biogas and bio-fertilizer.

9. The Ministry is separately taking up with NABARD and IREDA for inclusion of demonstration of the 'Technology-package on medium size biogas-fertilizer plants (BGFPs) for extending their loan facilities.

10. IREDA may work as fund manager for the funds to be released for such demonstration projects depending on the project types.

11. Different types of entrepreneurial model may emerge while proceeding with the technology demonstration on BGFP, like some entrepreneurs may work as service providers for purification and bottling services and others may only opt for biogas generation.

12. Mobile purification units may also be supported for addressing the need of relatively smaller biogas-fertilizer plants depending on their suitability in an area.

13. High rate bio-methanation technology may be used unless the capacity of the plant is such that high rate bio-methanation technology is not economically viable.

14. In order to ensure suitable biomass feed-material supply for the 10-15 years life of the BGFPs it would be useful to adopt biogas generation technology capable of handling multi-biomass feed-materials/ co-digest cattle dung and non-woody loose and leafy agro-forestry residues/ 100% non-woody biomass feed-material/ 100% cattle dung to be fed in biogas plants. For the purpose, pre-treatment system is to be designed and attached for preparation of feed-materials suitable for digestion in the bio-methanation digester/ biogas generation plants.

15. The issue of adjustment of pH and C: N ratio also needs to be addressed while selecting high rate bio-methanation designs so as to handle various types of biomass feed-materials.

16. It may also be useful to collect and bottle $CO_2$ for making the demonstration project better viable, in addition to enriching and bottling of biogas to CNG/ LPG quality. Accordingly, some projects may be taken up for $CO_2$ recovery as well. Safety issues and quality standards are also required to be addressed.

17. While taking on for implementation of demonstration projects standardised techno-commercial packages are proposed to be developed for faster replication and dissemination.

18. Financial releases from MNRE are proposed to be made in accordance with the milestones set for implementation of projects, namely construction of plant, purchase of equipment and accessories, commissioning of the plant and after one year of successful operation.

**Enclosure-IV**

**General Guidelines for the preparation of Feasibility-cum-Detailed Project Report for Commercial Component for Development of projects on Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy'**

**1. Introduction**

This paragraph should explain in brief about the salient features of the project like the product, Promoters, Constitution, Location, Project Cost etc. This paragraph should convey about entire project precisely.

**2. Promoters and Management**

This paragraph should highlight about the organization, management set-up & details about the promoters like Name, Father's Name, age, Qualification Past experience & other achievement of each promoter.

**3. Product & its Uses**

This paragraph should deal with the proposed output along with various uses of the same.

**4.1 Biogas Generation and Purification Process, Dewatering of Slurry and Packaging**

Should clearly show the various steps involved as above along with details of machineries used at each stage. The flow chart should also be given. Details about the feed-stock and bio-fertilizer storage should also be given.

**4.2 Producer gas Generation and Purification Process, Electricity Generation and Distribution**

Should clearly show the various steps involved as above along with details of machineries used at each stage. The flow chart should also be given. Details about the feed-stock and loss management and safety strategy for producer gas/ Electricity generation and distribution should also be given.

**5 Market Potential**

This paragraph should deal with the market potential of the output. Competitive position and demand supply position etc.

**6 Project Cost**

**6.1 Land and site development**

The details of location of the land, size of plot, freehold/leasehold, cost of the land, Registration status in favour of the unit etc. to be given.

**6.2 Building, Civil works and water supply/ arrangement.**

**6.3 Plant & Machinery**

Details about the plant & machinery items proposed to be purchased be given with details of suppliers.

**6.4 Misc. Fixed Assets**

Amount proposed to be invested for office equipment & other misc. capital assets not directly related with production be given.

**6.5 Preliminary & Pre-Operative Expenses**

Under this head item-wise details of all incidental cost related with setting-up the project, up to the stage of starting production to be included.

**6.6 Provision for Contingencies**

Reasonable provision for contingencies to be provided depending upon the stage of implementation and amount to be spent.

**6.7 Initial Working Capital for one cycle**

Detailed calculation of Working Capital (as per the proforma) be done for different capacity utilizations & based on the calculation so derived, the margin money required in the first year of operation to be calculated.

**6.8 Interest during Construction phase (in case of bank loans)**

**7. Pattern of Finance:**

Under this head various sources of financing the project cost should be dealt with.

**8. Installed Capacity & its Utilisation**

Under this head the total installed capacity (product wise) of the project and its utilization programme in the ensuing years is to be mentioned.

**9. Main Cost Components**

In this paragraph the details of various cost components like, Raw Material, Packing Material, Manpower & other major heads of expenses should be dealt with. Details should be given about their availability, cost etc.

**10. Utilities**

Details about utilities such a Power, Water etc. to be given like sources, quantum required & cost thereof etc.

**Enclosure-V**

**Format for Empanelment of Project Consultants for Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy'**

1. NAME OF THE ORGANIZATION :

2. ADDRESS :

3. CONSTITUTION :

4. DATE OF ESTABLISHMENT :

5. TELEPHONE.NO. :

6. FAX NO. :

7. E-MAIL ADDRESS :

8. DETAILS OF THE PROPRIETOR/ PARTNERS/ DIRECTORS:

| Name | Qualification | Experience |
|---|---|---|
| | | |

9. NATURE OF ACTIVITIES : i)
ii)
iii)

10. AREA OF SPECIALISATION:

11. DETAILS OF PAST ASSOCIATION WITH FINANCE & BANKING SECTOR

(i) As Part of the Higher Management team :

(ii) As Consultants :

12. ENLISHMENT WITH OTHER BANKS FINANCIAL INSTITUTIONS :

13. MAJOR ACHIEVEMENTS :

14. ATTACH CORPORATE PROFILE :

PLACE :
DATED:

Signature

**Enclosure-VI**

**Specific Terms & Conditions for taking up of projects on Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy'.**

(i) Biogas Digesters:
   a. Multi-feed biogas digester system to be installed.
   b. Suitable system/ mechanism for maintaining temperature in winter season may be used while keeping in view techno-commercial viability.

(ii) Cost of land is excluded from cost of the project.

(iii) Project Duration: 6-12 months.

(iv) Details of final designs & drawings of digesters, systems, equipments, completion schedule etc. have to be given to MNRE.

(v) Release of funds:
   1. After sanctioning of the project the Ministry shall release funds to IREDA in accordance with the provisions of the RDD&D policy Guidelines dated 23rd July 2008.
   2. IREDA in turn would release funds to the concerned Bank as identified by the project promoter.
   3. The project have to have a tie-up with Banks for financing the projects in full except 20% contribution of the project promoter unless the promoter can finance 50% of required funds as its share by self (duly supported by necessary documents and credibility by the concerned Bank).
   4. The releases of funds for the project may be made by the concerned Banks as per agreement between the promoter and the Bank.
   5. IREDA may timely match the funds released by Banks, generally, in three installments linked with progress of the project. The last installment could be released after six months of commissioning and operation of BGFP plant(s).

(vi) Monitoring and Evaluation: Following three-tier monitoring mechanism is proposed to be followed: -

   1. IREDA is to evolve a suitable monitoring mechanism for financial management based on physical activity for construction and commissioning of the projects for five years.
   2. IIT Delhi to carry out technical monitoring and hand-holding of the consultants/ promoters for five years.
   3. State Nodal Agencies to carry out monitoring of the projects during execution and for five years of post-installation period.

4. Depending on the requirement the project may be jointly inspected by a representative each of IREDA, IIT Delhi, the concerned SNA and BDTC.

(vii) Project support: In accordance with the provisions of the RDD & D Policy Guidelines 10% of the MNRE share provided to IREDA is to be utilized and/ or released by IREDA for project appraisal; fund management; technical monitoring; hand-holding of the consultants/ promoters; for preparation of documentation on different types of technology packages through IIT Delhi, creation of BGFP Project Management Cell, Publicity, business development, project development and monitoring, meeting the cost for any unforeseen technical assistance for a period of five years after installation, etc. in accordance with the advice of a Committee steered by the Bio-energy Technology Development Group of the Ministry of New and Renewable Energy.

(viii) General:

1. The project promoter has to give an undertaking for operation and maintenance of the plant for 15 years after installation and commissioning.
2. The assets created under the technology Demonstration project cannot be disposed of without prior permission of MNRE, GOI.
3. All required statutory clearances/ permissions have to be obtained by promoters from the concerned authorities such as Petroleum & Explosives Safety Organization (PESO), Pollution Control Board, Local Authorities, Industries Department etc., as may be required.
4. The project promoter will not avail of additional grant/ financial assistance from any other Central Govt./ State Govt./Autonomous bodies for this project.
5. The developer or his successor will be required to provide data on its biogas generation, bio-fertilizer production and performance on a six monthly basis to MNRE for a period of minimum five years after commissioning of the project.
6. The Ministry will have the right to publish case studies/ success stories/ articles/ technical papers on this project.
7. Release of Central Financial Assistance by the Ministry will not make it a party to any liability which may arise on account of operation of the project such as accidental injury to persons, damage to surroundings, rehabilitation of displaced persons, any other disputes etc.
8. A display board may be installed at prominent location of the project, mentioning the support of MNRE and other details of the project.

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**Enclosure-VII**

**General Terms & Conditions for taking up of projects on Establishment of Business Model for Demonstration of an Integrated Technology Package for creation of smokeless villages using biogas/ bio- energy systems and meeting 'Life-line Energy'.**

1. Approval of the RDD & Technology Demonstration Project and the grant being released is for the said sanctioned project and should be exclusively spent on the project within the approved time duration. The project promoter is not permitted to seek or utilize additional grant from any other organization (government, semi-government, autonomous and private bodies) for this Demonstration project. Any un-spent balance out of the amount sanctioned must be surrendered to the Government of India through a ECS/ crossed Demand Draft drawn in favour of Drawing & Disbursing Officer, MNRE payable at New Delhi.

2. Full infrastructure facilities by way of additional accommodation, water, electricity, communication etc. and additional expenditure, if any, for smooth implementation and operation of the project for at least 15 years shall be given by the project promoters(s) at their cost.

3. For permanent, semi-permanent assets acquired solely or mainly out of the project grants, an audited record in the form of a register in the prescribed format (given as Annexure-XIII on MNRE website) shall be maintained by the project promoter. The term "Assets" include (a) the immovable property acquired out of the grant; and (b) movable property of capital nature where the value exceeds Rs. 50,000/-. The project promoter is required to send to the MNRE a list of assets acquired from the grant. The grant shall not be utilized for construction of any building other than specific provision is made for the project as reflected in the FDPR.

4. Assets acquired in the project shall be shared proportionately between Government of India and project promoter in accordance with the cost-sharing pattern of the project, in case of incompletion of the project. The assets should not be disposed off or encumbered or utilized for purpose other than those for which the grant had been sanctioned, without the prior permission of this Ministry.

5. The 'Project Completion Report' must include working engineering design and drawing of the technology demonstration project with specifications, including plan and section drawings, and list and quantity of materials, etc.

6. At the time of seeking further installment of grant and closure/ termination of the project, the project promoter has to furnish the following documents:

a) Utilization Certificate (U.C.) for MNRE grant and 'Statement of Expenditure' (S.O.E.) for the previous financial year (in original or copy if sent earlier) in formats given as Annexure-IX, X and XI on MNRE website (http://mnre.gov.in) under RDD&D policy guidelines.

b) Copy of Periodical Progress Report(s).

7. Request for specific approval of the Ministry to carry forward the unutilized grant to the next financial year for utilization for the same project, should be sent along with S.O.E & U.C., after completion of the financial year.

8. The Comptroller & Auditor General of India, at his discretion, shall have the right of access to the books and accounts of IREDA and the project promoter maintained in respect of the grant received from the Government of India.

9. IREDA and the project promoter will maintain separate accounts for the project in a Bank. If it is found expedient to keep a part or whole of the grant in a Bank account earning interest, the interest thus earned should be reported to the MNRE and should be reflected in the 'Statement of Expenditure'. The interest thus earned will be treated as a credit to the project to be adjusted towards further installment of grant.

10. All the personnel appointed under the project, for the full/ part duration of the project, are to be treated as project personnel on contract to the project promoter and will be governed by the Administrative rules/ service conditions (for leave, TA/DA etc.) of the project promoter. They are not to be treated as employees of the Government of India under any circumstances and the MNRE will have no liability, whatsoever, for the project personnel after completion of the project duration.

11. The Ministry reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or sufficient progress has not been reported under the project or sufficient efforts have not been devoted.

12. If the results of RDD & Technology Demonstration Project are to be legally protected under IPR, the results should not be published without action being taken to secure legal protection for the research results.

13. Project Promoter wishing to publish technical/ scientific papers based on the out come of the project should acknowledge the assistance received from MNRE, indicating the project sanction no. under which grant has been given to the project promoter and provide a copy of the paper to the Ministry as soon as it is published.

14. If the result is in the form of a survey report/ product performance evaluation or other such activities which have commercial implications, the project promoter will not publish the results without specific written approval of this Ministry.

15. The project promoter should provide a copy of the 'Full Text Document' of the Patent within one month of its publication.

16. For projects identified to have a distinct potential for generating know-how, in the form of product/ process, that could be protected through patenting, copyrights etc., the project promoter should contact MNRE/ refer to the website of the Ministry to obtain further details.

17. Patents/ Intellectual Property protection shall be in the joint names of MNRE and grantee organization(s) and technical personnel who have actually worked for the project shall be the inventor(s).

18. Royalty/ proceed on sale generated through the 'Intellectual Property' created by the project shall be shared in accordance with the guidelines contained in the DST circular issued with the concurrence of Ministry of Finance, Department of Expenditure vide their O.M. No.33 (5) PF-II99, dated 22nd February, 2000 or subsequent circulars which may be issued by DST/ MOF on the subject (available on MNRE website http://mnre.gov.in as Annexure-XV under RDD&D policy guidelines.) and guidelines given at sections (ix) and (x) regarding IPR.

19. In case of any dispute the decision of Secretary, Ministry of New and Renewable Energy shall be final.

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