

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

Block No.- 14, C.G.O. Complex,
Lodi Road, New Delhi - 110003
Telefax: 011-24361604
Mobile: 9810585602
E-mail: shuklaar@nic.in

7-2/2008-BE

03.07.2009

To

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

Subject: Development of projects 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 Areas’.

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%. For demonstration of a technology package on Biogas-Fertilizer Plants an advertisement was hosted on the website of the Ministry and ‘expression of interest’ has been received from many States. So far 5 proposals have been sanctioned for implementation.

2. In pursuance of the said provisions and ‘expression of interest’ received by the Ministry, proposals are invited for 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 Areas’ through the involvement of entrepreneurs. 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. However, 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 including NABARD, IREDA and KVIC. The capacity of BGFP could be 200, 400, 500,1000 m³ biogas/ day and multiples thereof depending on the availability of suitable biomass feed-materials and cattle-dung.

3. 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'.

4. The interested SNAs, institutions/ industries/ entrepreneurs may prepare Feasibility-cum-Detailed Project Report (FDPR) for taking up such projects in a prescribed format attached at Enclosure-I. Specific guidelines and General guidelines to be considered for preparation of FDPRs are attached at Enclosure-II and Enclosure-III. Format for registration of consultants is given at Enclosure-IV. Specific Terms & Conditions and General Terms & Conditions are also given at Enclosure-V and VI. 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.

5. 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 developer.

6. 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)

**Feasibility-cum-Detailed
Project Report(FDPR)**

for

by _____

Contents

Sl. No.	Item	Page No.
	<i>Proposal at a Glance and check- list</i> - Proposal at a Glance - Check-list	
I.	<i>General Information</i>	
1.1	Proposed capacity of BGFP project	
	- Raw Biogas generation	
	- Purified Biogas Generation	
	-CO ₂ generation	
	- Biogas-Fertilizer Production	
1.2	Project Promoter	
1.3	Proposed location of the project	
1.4	Accessibility to proposed location of the project	
1.5	Special category, if any, location	
1.6	Details of proposed project land	
II.	<i>Technical Component</i>	
1	Biogas Generation	
1.1	Availability of Biomass Raw material/ Feed-stock	
1.2	Pre-treatment/ Slurry preparation and handling	
1.3	Biogas Digester design and sizing suitable for multi-feed stock	
1.4	Biogas Storage	
2.	Biogas Purification/ enrichment technology	
3.	Biogas Utilization	
4.	Post Treatment of Digested Slurry	
5.	Biogas distribution	
6.	Utility requirements	
7.	Chemicals and other requirements	
8.	Land requirement	
9.	Operation and maintenance requirement	
III.	<i>Commercial Component</i>	
1	Project Cost	
1.1	Cost of Land	
1.2	Land Development cost	
1.3	Building cost	
1.4	Cost of Plant & Machinery	
1.5	Miscellaneous Fixed Assets	
1.6	Pre. & Post-Operative Expenses	
1.7	Provision for contingencies	
1.8	Margin for Working Capital	
1.9	Cost of Biomass Raw Material/ Feed-stock	
1.10	Manpower Cost	
1.11	Cost of Captive Power	
1.12	Cost of Water	
2.	Means of Finance	
3.	Conclusion	
4.	Annexures	
4.1	Annexure-I: Building, Civil works & Water supply	
4.2	Annexure-II: List of Plant & Machinery	

4.3	Annexure-III: Calculation of Manpower Cost	
4.4.	Annexure-IV: Working Capital Calculation	
4.5	Annexure-V: Statement of Profitability Projections	
4.6	Annexure-VI: Cash Flow Statement	
4.7	Annexure-VII: Calculation of Debt Service Coverage Ratio	
4.8	Annexure-VIII: Calculation of Break-even point based on optimum capacity utilization	
4.9	Annexure-IX: Projected Balance Sheet for ten years	

**Project at a Glance
and Check-list**

I. Project 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. **Installed Capacity:**

(i) Biogas generation capacity:

(ii) Bio-fertilizer/ Manure Production:

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

Sl. No.	Product	Quantity (kg)	Value (Rs. in lakh)
i)	Raw Biogas generation		
ii)	Purified Biogas generation (____% of methane)		
iii)	Purified CO ₂ generation		
iv)	Bio-fertilizer/ manure Production		

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. Salient Projected Performance Data:

	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):

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
- 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
- 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, etc.

**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: _____m³
- iii) Purified Biogas generation (____% of methane): _____kg
- iv) Purified CO₂ generation _____kg
- v) Bio-Fertilizer/ manure Production: _____kg

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) Taluk: _____
- iii) District: _____
- iv) State: _____
- v) Telephone: _____
- vi) Fax: _____
- vii) E-mail: _____

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-		

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 generation

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

- 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 and non-woody 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: i) Agricultural residue (please specify) ii) Agro-industrial by-products / wastes iii) Non-edibles Deoiled Cakes (please specify) iv) Kitchen waste v) Abattoir waste		
3.	Any other feed-stock		
	Total:		

1.2 Pre-treatment/ Slurry 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, Palvariser) preparation and handling, pumping, availability of equipments indigenous, imported.

1.3 Biogas Digester design and sizing suitable for multi-feed stock

- i) Digester retention time:
(Hydraulic retention time (HRT)/ Solid retention time(SRT):
- ii) Type of high rate bio-methanation digester.
- iii) Digester Model: - USAB, Modified UASB, Completely mixed, Fixed bed, Plug flow, CSTR, (BARC-NISARGRUNA), any other.

- iv) Digester retention time (HRT)
- v) Ability to handle different raw materials
- vi) Special design manufacturing, operation and maintenance requirement.
- vii) Indigenous availability, import requirement
- viii) Specific design, operation maintenance requirement
- ix) Specific advantages over conventional design

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 Upgradation/ 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. 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

4. 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

5. Biogas Distribution

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

6. Utility Requirement

- i) Captive Power (in house/ outside)
- ii) Water
- iii) Any other

7. Chemicals and other Requirements

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

8. Land Requirement

To be specified.

9. 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

10. Estimated cost of Biogas-Fertilizer 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.	Details of the design of the plant and bill of materials for construction* of plant, machinery/ equipment and accessories	
15.	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/ 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			

List of Plant and Machinery

Amount (Rs. in lakh)

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

Calculation of Manpower Cost

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

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

Working Capital Calculation

Sl. No.	Particulars	Days	Years (Rs. in lakh)				
			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						

Statement of Profitability Projections

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

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

Cash Flow Statement

Sl. No.	Particulars	Const. Period	Years					(Rs. In Lakh)
			I	II	III	IV	V	
1.	<u>Sources Funds</u> Net Profit before tax with Interest Added Back Capital Grant in Aid Unsecured Loan Term Loan Increase in Bank Loan Depreciation							
	Total Funds Available [A]							
2.	<u>Application Of Funds</u> Fixed Assets Increase in Current Assets Repayment of Term Loan Interest on Term Loan 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]							

Calculation of Debt Service Coverage Ratio

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

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

Calculation of Break-Even Point based on Optimum Capacity Utilization

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

PROJECTED BALANCE SHEET FOR 10 YEARS

(Rs in Lakh)

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

Enclosure-II

Specific Guidelines to be considered for preparation of FDPRs 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 Areas’ 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 and bio-fertilizer production 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 on BGFP.
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 CO₂ 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 CO₂ 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.

General Guidelines for the preparation of Feasibility-cum-Detailed Project Report for Commercial Component for Development of projects 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. 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 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.

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.

Format for Empanelment of Project Consultants for 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 Areas’

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

Specific Terms & Conditions for taking up of projects 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 Areas’.

- (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.

General Terms & Conditions for taking up of projects 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 Areas’.

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 incompleteness 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 outcome 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.
