BIOGAS UTILISATION PROGRAMMES

IN

HARYANA

Haryana Renewable Energy Development Agency(HAREDA)
Akshay Urja Bhawan, Institutional Plot No.1, Sector-17, Panchkula
Phone: 0172-2587233, 2587833, Fax : 0172-2564433
Email:drehareda@gmail.com Website:www.hareda.gov.in

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Biogas is a clean, un-polluting, smoke and soot free fuel. It contains 55 to 70 per cent methane which is inflammable. Biogas is produced from cattle dung, human excreta and organic matter in a "Biogas Plant" commonly known as "gobar gas plant" through a process called "digestion". The manorial value of the dung is also enhanced by this process. It helps in simultaneously obtaining both cooking fuel and enriched manure from cattle dung. Besides, women and children are saved from hardship and drudgery of collecting and head solid loading of heavy bundles of firewood, explore to smoke in the kitchen and time consuming cooking. It has also improved village / urban sanitation.

Haryana, with cattle population of about 7.6 million, has the potential a potential of generation of about 3.8 million cubic meters of biogas which can be used to generate about 300 MW power or can be purified, compressed and bottled for production of about 1.2 million Kg of compressed biogas.

One tone cattle dung by about 100 adult animals produces about 50 cu.m. biogas per day(@ 20 Kg per cum.). This gas can be utilized for thermal as well as power generation besides producing rich manure as a bye product. The gas generated can also be purified and compressed further to produce bio-CNG, which can find application for commercial purposes.

HAREDA SCHEMES:

1. INSTITUTIONAL BIOGAS PROGRAMME

HAREDA is implementing this scheme to promote installation of biogas plants in gaushalas, dairies etc. to meet their energy requirement. The gas is used for cooking as well as for power generation. To promote the installation of IBP's, State Govt. is providing financial assistance @ 40% of the plant cost to the Charitable institutes only. So far, 114 Institutional Biogas Plants of 6905 Cu. M. capacity have been installed in various Gaushalas/ Institutions in the State For the year 2015-16, State Financial Assistance shall be available for poultry farms and commercial/individuals dairies also. The detail about tentative cost of biogas plant and State subsidy is as under:

S. No.	Capacity	No. of animals required	Cost of the plant (Rs.)	Max. State Subsidy (40% of the project cost) (Rs)
1	25 Cum	70-80	3,18,000	1,27,200
2	35 Cum	100-110	5,05,000	2,02,000
3	45 Cum	125-140	5,97,000	2,38,800
4	60 Cum	175-185	7,56,000	3,02,400
5	85 Cum	250-270	9,89,000	3,95,600

Procedure:

(i) Applications about availing State subsidy are to be submitted to the office of the Additional Deputy Commissioner, District Rural Development Agency of the respective district in the prescribed format **(Annexure-I.).** The plant is to be installed after the subsidy is sanctioned by HAREDA.

(ii) These plants shall be got installed by users as per KVIC drawings.

(iii) State subsidy shall be released after installation & commissioning of the plant as per KVIC drawings & submission of Commissioning Certificate in the prescribed format **(Annexure-II)** duly signed by the beneficiary institution, contractor & district P.O./A.P.O. supported with photographs and audited Statement of Expenditure**.**

(iv) Applications shall be considered on First Come First Serve basis. However, preference shall be given to the charitable institutions/Goshala's .

SECURITY DEPOSIT:

In order to ensure that only genuine beneficiaries who are willing to implement the project within given time schedule apply for the financial assistance, it has now been decided that the security amount shall be required to be deposited along with the application, as per detail given below:

Sr. No.	Capacity of plant	Security amount
1.	25 cu.m to 45 cu.m.	Rs.30,000/-
2.	60 cu.m. to 85 cu.m.	Rs.50,000/-

The applicants whose projects are sanctioned will have to implement the project within six months time from the date of issue of sanction and the security amount shall be refunded on completion of digestor, upon certification of concerned ADC office otherwise it will be forfeited."

2. BIOGAS POWER (OFF GRID)GENERATION PROGRAMME

Biogas based power generation technology with 100% gas engine using cattle dung is also being promoted by the Ministry of New & Renewable Energy (MNRE), GoI Ministry is also providing the Central Financial Assistance for power generation/thermal applications from biogas as per detail given below:

Power generating capacity	**Biogas plant capacity**	**Requirement of Detailed Project Report (DPR)**	**CFA/subsidy limited to the following ceiling or 40% of the cost of the system whichever is less**	
			Power Generation	**Thermal Applications**
3-20kW	25 M^3 to 85 M^3	No DPR required	Rs. 40,000 per kW	Rs. 20,000 per kWe
>20kW up	Any combination	DPR required	Rs. 35,000 per	Rs. 17,500 per

to 100kW	of above plants or approved alternate capacity / design		kW	kWe
>100kW up to 250 kW	Any combination of above plants or approved alternate capacity / design	DPR required	Rs. 30,000 per kW	Rs. 15,000 per kWe

The capacity of the biogas plant can be calculated by (Power to be generated in kW)x (no. of hours of power generation)x1.2 = capacity of the biogas plant. For example, a biogas plant of 85 cum. capacity can generate 10kW power for about

7 hours (i.e; 10x7x1.2). About 20 kg cattle dung is required to produce one cum. biogas.

Procedure:

(i) Application for setting up of biogas power (off grid) projects upto 8 KW capacity is to be submitted in the prescribed format enclosed as **Annexure-III** with the respective Additional Deputy Commissioner.

(ii) Application for setting up of biogas power (off grid) projects more than 8 KW capacity is to be submitted in the prescribed format enclosed as **Annexure-IV** alongwith Detailed Project Report (wherever required as per capacity) with the respective Additional Deputy Commissioner.

(iii) Applications are to be supported with and undertaking as per **Annexure-V** and Affidavit as per **Annexure-VI** on stamp paper of Rs. 50./-.

(iv) The MNRE/GOI guidelines/eligible component for CFA are at **Annexure-VII.**

(v) After visiting the site and verifying the availability of required dung and land, the application shall be recommended by the District Office to HAREDA.

(vi) After scrutiny of the application, the proposal shall be recommended to the MNRE/GOI for their consideration and sanction of CFA.

(vii) After receiving the sanction from the MNRE/GOI, the same shall be conveyed to the District office and the user institute to initiate the work for installation of plants.

(viii) Ministry shall release the subsidy on reimbursement basis after successful commissioning of the plant as per DPR and submission of Audited Statement of Expenditure, inspection report, photographs with minimum power generation data for three months including the operational time and units generated per day.

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ANNEXURE-I

FORMAT FOR SUBMISSION OF PROPOSAL FOR INSTALLATION OF INSTITUTIONAL BIOGAS PLANTS

1.	Name of Beneficiary Institution	
2.	Complete Address Name of Village Block District	
3.	Contact person Name & Designation Telephone No. Office Res.	
4.	Whether Chartable Institution /Commercial Organization	Please attach copy
5.	Whether a Regd. Society	Yes/No If yes, a copy of the registration certificate be attached.
6.	Availability of land of the plant Available free of cost: Dimension of land	
7.	Cattle population Buffalos (Nos.) Cows (Nos.) Others (Nos.) Total	Adult Minor
8.	Cattle dung availability per day	
9.	Whether latrines are to be attached with IBP If yes, No. of latrines No. of people willing to use latrines	Yes/No.
10.	Portable water	Available/not available
11.	Water table at site Pre mansoon During mansoon	
12.	Proposed specific uses of Biogas **For cooking** No. of connections to be provided No. of families	
13.	Whether desired to run engine with gas If yes,	Yes/No.

	HP & make of engine	
14.	Gas required for lighting If yes, No. of lights required Hours of use	Yes/No

It is certified that the scheme of IBP alongwith beneficiary share required has been explained to the undersigned and the Society/Organization is willing to install the IBP of _____Cu.M. capacity and is agreed to bear the cost over and above the state subsidy.

Signature of the authorized representative
with seal
Name:
Designation:
Tel/Mobile No.

Verification by concerned District PO/APO

The above site has been visited by PO/APO and found feasible for installation of _____ cu.m. capacity biogas plant. The consent letter for sharing the cost over and above the state subsidy has been obtained from the user institute. The user institute has agreed to install the plant as per KVIC drawings itself .

Signature of the Additional Deputy Commissioner
Cum-Chief Project Officer
DRDA……

ANNEXURE-II

HARYANA RENEWABLE ENERGY DEVELOPMENT AGENCY(HAREDA)

COMPLETION CERTIFICATE FOR INSTITUTIONAL BIOGAS PLANT

This is to certified that an Institutional Biogas plant of __ cu.m. per day capacity comprising of following system/item has been constructed at _____ Village_____ Block_____ District_____State_____with a total cost of Rs._____ through M/s _____ & work has been completed on _____.

Sr.No.	System/Item	Description	Nos.
1.	Gas Plant	_____ cu.m	
2.	Burners	_____ CFT	
		_____CFT	
		_____CFT	
		_____CFT	
		_____CFT	
3.	Manure pits	_____ ft. x _____ ft.	
		_____ ft. x _____ ft.	
4.	Distribution pipe line	_____" dia	_____ ft.
		_____" dia	_____ ft.
5.	Duel fuel engine/kit		
6.	Lamp		
7.	Mixing unit with churner		
8.	Display board		
9.	Others		

(Signatures of the Goshala Representative with seal)

(Signature of the Contractor with seal)

Verification by concerned PO/APO.

The plant was inspected by me on _____ and found to be completed in all respect.

_____
Signature of the PO/APO(IREP)
District_____

(The completion certification should be supported with two coloured photographs of the plant & audited statement of expenditure).

Annexure-III

FORMAT FOR BASIC INFORMATION FOR PROJECTS UPTO 8 KW ON BIOGAS POWER (OFF-GRID) PROGRAMME

1	Name and address of State Govt. Nodal Deptt./Nodal Agency/Approved NGO's/BDTC		
2	Name & address of project executing organization/agency (if other than SND/Agency/BDTC)		
3	Details of site indicating location and address with expected load and use of electricity etc.		
	1	Capacity of the biogas plant9cubic meter per day or cubic meter per hour)	
	2	Name of manufacturer/supplier and cost of 100% biogas engines. DG-Genset and associated control panel etc.	
	3	Total installed capacity in KW	
	4	No of biogas plants with capacity of each in m3 proposed	
	5	Proposed operational hours per day entirely based on Biogas	
	6	Unit/Estimated actual cost intimated by the user/ manufacturer and verified by the concerned SND/SNA/KVIC/BDTC	
	7	Total cost of the project (in Rs.)	
	8	Amount of Central Financial Assistance (CFA) as per approved scheme of Biogas power plant (in Rs.)	

Certified that

1. Adequate quantity of surplus biomass is available at the site and use/applicant is genuinely interested for installation and operation of biogas power plant on regular basis.
2. User organization has agreed to provide balance funds over and above CFA for installation of proposed biogas power plant.
3. User organization has agreed to operate and maintain the system at their own on regular basis for a minimum period of 10 years.

Date: Name & Signature of the promoter/user
Place: (Countersigned by Head of SND/SNA/BDTC or/and Manufacturer)

ANNEXURE-IV

FORMAT FOR BASIC INFORMATION FOR PROJECTS ABOVE 8 KW BIOGAS POWER (OFF-GRID PROGRAMME)

Sr.No.	Name of the project	Biogas based power generation
1.	Name of the Beneficiary and address	
2.	Geographical details of the proposed site	
	A) Name of the village	
	B) Post	
	C) Block	
	D) Taluk	
	E) District	
	F) Pin code Number	
	G) State	
	H) Nearest bus stand/Railway station	
	I) Name of the contact person	
	J) Tel./Mobile Nos of contact person	
	K) Telephone No. of the site	
3.	Name of address of the State Agency/BDTC who propose to undertake the work	
4.	Category of Beneficiary/institution Please (√) tick	a)General b)Private c)Government d)Public organization e)Other
5.	Proposed use of generated power with detailed configuration	
6.	Mode of use and Total requirement of power kwH/DAY	
7.	Proposed size of Biogas plant in cubic meter(m3)	
8.	Available cattle	
9.	a)Details of Cattle (Availability of dung in kg.)	
	b)Any other like goats, pigs, poultry etc. Please specify the Nos 7 its dropping in kg.	
	c)Agricultural waste in kg.	
	d)Other degradable biomass in kg. (Please attach separate sheet along with the full details of each raw material)	
	e)No. of latrine attached & No. of users	
	f)Availability of land for proposed biogas plant and housing generator etc.	
10.	Procurement and commissioning of (*Name of the proposed power generating system, Mechanism for manufacturers and operation & Maintenance of the system suppliers to be given)*	
11.	Estimated quantum of power to be generated through biogas plant, keeping in view the minimum 10 hours daily operation of the proposed power plant entirely based on Biogas generation.	

12.	Proposed Electrical Load Distribution with Biogas power plant.	
	a) Domestic (Details to be given)	
	b) Village industry (Details to be given)	
	c) Irrigation/Agriculture(Details to be given)	
13.	Types of engine proposed for power generation	
14.	Capacity of engine/micro turbines etc. in KVA	
15.	a) Cost of 100% biogas engine coupled with Genset, associated Central panel and power room etc. (in Rs.)	
	b) Cost of internal transmission system used for electrification (for a &b please attach separate sheet along with full details)	
16.	Cost of proposed biogas plant (in Rs.)	
17.	Manure management system	
18.	Approximated cost of electricity that may be generated through gas (Rs./kWh)	
19.	Source of funding of the project (in Rs.)	
	a) Own fund	
	b) Bank loan	
	c) Central financial assistance	
	d) Total cost (in Rs.)	
20.	Source of funds for meeting operation and maintenance cost of the system.	
21.	Undertaking from State Noda Deptt./Agencies/BDTC *(An undertaking to this effect from agency for procurement installation, operation and maintenance of the system on regular basis)*.	
22.	Mechanism to transfer the power plant to user/Panchayat/Society/Entrepreneur etc. by SNA/SND/BDTC after specific period.	
23.	Any other information with regard to the project	

Date: Signature of the Beneficiary
Place: Who undertakes the project

Date: Signature of the agency who promote/
Place: Undertake the work of power generation & construction of Biogas plants etc.

Date: Verified & countersigned by the Head of the concerned
Place: SND/SNA/KVIC/BDTC

Annexure-V

On Rs. 50/- stamp paper

UNDERTAKING

The management of < beneficiary name > has submitted proposal for setting up of ……Kwe power generation project using < type of raw material > as feed material for financial assistance from Ministry of New & Renewable Energy (MNRE) , Govt. of India.

We undertake that;

1. The cost over & above the MNRE/GOI share will be borne by our organization.

2. We will operate the plant for a minimum period of 10 years and shall not dislocate the same without the prior permission of the Ministry.

Deponent

Attested as
identified (dated)
Notary Public

Authorized signatory of the industry

Annexure-VI

On Rs. 50/- stamp paper

AFFIDAVIT

1. <*Beneficiary name and full address*> do hereby declare solemnly declare and affirm as under:-

1. That the company of <beneficiary name> has applied for getting up of biogas based power generation project at <site address> under the scheme of Biogas Power (Off-grid) to MNRE, New Delhi through <implementing agency name>.
2. That the company has sufficient funds/materials at present and same will be available to run the plant on sustainable basis for a minimum of 10 years.

Deponent

Verification:

Verified that the content of this affidavit are true and correct to the best of my knowledge and belief nothing has been concealed therein.

Attested as identified Deponent

(dated)

Notary Public

Authorized signatory of the industry

Annexure-VII

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
(BIO-ENERGY TECHNOLOGY DEVELOPMENT GROUP)

BIOGAS BASED POWER GENERATION SYSTEM

Biogas technology provides an alternative source of energy mainly from organic wastes. It is produced when bacteria degrade organic matter in the absence of air, Biogas contains around 55-65% of methane, 30-40% of carbon dioxide and small quantities of Hydrogen, Nitrogen, Carbon Monoxide, Oxygen and Hydrogen Sulphide. The calorific value of biogas is appreciably high(around 4700 kcal or 20 MJ at around 55% methane content). The gas can effectively be utilized for generation of power through a biogas based power-generation system after dewatering and cleaning of the gas. In addition, the slurry produced in the process provides valuable organic manure for farming and sustaining the soil fertility.

1. Components of a Biogas based Power Generation System

Biogas Plants
- Gas Cleaning System
- Engine with alternator
- Control Panel along with Energy Meter
- Machine Room/Shed

Manure management system/protocol

2. Biogas plants

Standard KVIC floating drum model(vertical or horizontal type) would be supported. The eligible item associated with a biogas plant includes:

Digester, gas holder and accessories
- Feed/slurry handling system(composed pits) with water supply and storage
- Initial feed
- Gas outlet

3. Gas Cleaning System

The biogas contains hydrogen disulphide gas. Concentration of hydrogen disulphide in access of 0.1% is harmful to the engine. Hence, it is necessary to remove hydrogen sulphide before the gas is taken to the engines by putting with H_2s and Co_2 Scrubber.

4. Engine with alternator

100% biogas engines
Micro-turbines

5. Control/Monitoring Panel

BIS Standard control/monitoring panel would be supported.

6. machine Room/Shed

A proper machine room with shed would be planned as per standard practices. The biogas generated in the digester, if necessary can be stored in a suitable storage unit or membrane type storage balloon.

7. Manure management system/protocol

Manure management is an integral part of a biogas based power generation system for arriving at an economically feasible operation level. Marketing strategy of the biogas slurry of the value added bio-manure is required to be defined.

8. Any new efficient system for production of biogas, cleaning of the gas and conversion of the gas to electricity, etc. can also be used subject to prior approval of the Ministry.

9. Fixed dome/Deenbandhu and other approved models of biogas plant up to capacity of 10-100 cubic meter per day may also be propagated as per design dimensions and standards for the same developed at BDTC, PAU, Ludhiana, Punjab and medium and large capacity approved models of biogas plants for digestion of cattle dung and other suitable biomass. Approval of MNRE may be sought for any new model of Biogas plant before submission of project proposal(s) under these guidelines.

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