

Annexure I – Application and Detailed Innovation Report (DIR)

1. Applicant Details

Name of the Applicant:

Date of establishment:

Complete postal address:

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State:

PIN:

Telephone No. (1): +91 (STD code)

Fax No.: +91 (STD code)

Name of the contact person (1):

Mobile No.:

Email ID:

Name of the contact person (2):

Mobile No.:

Email ID:

GST number:

Registration/certification details:

2. Project Site Location

Project name:

Site address:

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Site Area:

Nearest town:

Distance from the town:

In case of leased land,

Details of the lessors

Duration of lease

3. Biogas Plant Specifications

3.1. Biogas generation (m^3/d):

3.2. Organic waste processing (tonnes/day):

3.3. Plant Load Factor (PLF %):

3.4. Contracted organic waste feedstock availability:

Cattle dung (tonnes/year):

Poultry litter (tonnes/year):

- Pressmud (tonnes/year):
- Food, fruit and vegetable processing waste (tonnes/year):
- Other types of organic waste (add lines, if required)
- (1): Qty (tonnes/year):
- (2): Qty (m³/year):
- 3.5. Electricity requirement (kW):
- Electrical energy requirement (kWh/year):
- 3.6. Biogas applications
- Thermal/cooking (m³/y):
- Power generation (kW):
- Electricity generation (kWh/year):
- Bio-CNG/CBG/CBM generation (tonne/year):
- 3.7. Organic manure generation
- Solid manure (tonnes/year):
- Liquid manure (m³/year):

4. Plant Design and Operation

(Please provide general description including major equipment, type of Anaerobic Digestion (AD) process: dry/wet, digester types, feed preparation, digester heating, biogas collection and storage, power generating unit, biogas upgrading unit, Bio-CNG compression and storage, solid-liquid separation of digestate, manure preparation, specify standard followed (such as BIS or other international) etc., maximum 1000 words)

(Block Flow Diagrams (BFD)/ Process Flow Diagrams (PFD))

5. INNOVATION

(60 Points)

(The following six broad areas of innovation from 5.1 to 5.6 are identified for the demonstration. Elaborate overall impact of innovation on the sustainability of the project and technical, financial, social, and environmental aspects social. Maximum word limit - 1000)

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5.1. Feedstock pre-processing and management

(Description in this section shall include information related to the modification of physical and/or chemical properties of organic waste to increase its shelf life and to optimize overall biogas generation process and plant design will be considered as one of the areas of innovation. The chemical pre-treatment of organic waste shall not be taken into consideration under feedstock pre-processing and management as the chemicals used in the feedstock will remain in

'organic manure' after the anaerobic digestion, and may have detrimental impact on the quality of soil and ground water when used as fertilizer in agriculture.

New models of waste collection, transportation and storage facilitating optimized and sustainable supply of multiple wastes, including seasonal wastes as feedstock to the biogas plant will be considered as part of innovation in feedstock management area. Maximum word limit - 500)

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5.2. Plant equipment and design.

(Description in this section shall include information related to the latest developments in the design, construction and installation of anaerobic digesters or reactors enabling use of multiple wastes as feedstocks and improving resource efficiency such as recovery of waste heat and water will be included as part of innovation under plant equipment and design area. Maximum word limit - 500)

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5.3. Biogas scrubbing/ upgradation technologies.

(Description in this section shall include information related to the improvements in the existing biogas upgradation technologies such as Pressure Swing Adsorption (PSA), water scrubbing, amine scrubbing and emerging membrane filtration technology to minimize methane slip during upgradation or integrated design of multiple technologies to improve overall performance levels will be considered as innovation under the area of biogas scrubbing/upgrading technologies. Maximum word limit - 500)

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5.4. Biogas or Bio-CNG applications and innovative business models.

(Description in this section shall include information related to the local supply of cleaned biogas (H₂S scrubbed) through biogas micro-grid will be considered as innovative business model. Maximum word limit - 500)

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5.5. Value addition of digestate/ manure.

(Description in this section shall include information related to the developments in production of organic fertilizers using digestate will be considered as innovation under the area of value addition of digestate/manure. Maximum word limit - 500)

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5.6. New and advanced biochemical processes

(Description in this section shall include information related to the Biochemical / Microbiological processes will primarily include the demonstration of microbial culture or inoculum to enhance the biogas production. Maximum word limit - 500)

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5.7. Any other innovations

(Description in this section shall include information related to any other innovation than mentioned above. Maximum word limit - 500)

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5.8. Details of the Patents, if any

(Provide details of the certificate or application)

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6. Project Financing

(15 Points)

- 6.1. Total project cost (₹ Crore):
- 6.2. Equity (₹ Crore):
- 6.3. Loan (₹ Crore):
- 6.4. Loan status: (Sanctioned / Under processing / seeking banker)
Name of the Bank/ FI:
- Rate of interest (%):
- Loan tenure (years):
- 6.5. Total Project cost (₹ Crore):
- 6.5.1. Plant and machinery (₹ Crore):
- 6.5.2. Land and building (₹ Crore):
- 6.6. Revenue generation (₹ Crore/year):
- 6.7. Operating expense (₹ Crore/year):
- 6.8. Debt repayment (₹ Crore/year):
- 6.9. Simple payback (Years):

7. Impact of Innovation

(10 Points)

(Wherever it is applicable and available.)

	UOM	Pre-innovation	Post-innovation
7.1. On Captive consumption	(kWh)	-----	-----
7.2. On Capital Cost	(₹ Crore)	-----	-----
7.3. On Operating Expense	(₹ Crore/year)	-----	-----
7.4. On Revenue Generation	(₹ Crore/year)	-----	-----
7.5. GHG gas reduction	(tonnes of CO2/year)	-----	-----
7.6. Effluents Generation	(MLD)	-----	-----

8. Explanation

(15 Points)

(this section shall include references from international and national journals, reports, research papers, books and results of the in-house experimentation for the data provided under points 7. Maximum word limit - 3000)

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9. Documentation to be submitted at the time of application

(Submit the pdf copy of applicable documents from the following)

- 9.1. Land Document translated in English.
- 9.2. Raw Material Supply Agreement as applicable.
- 9.3. Biogas or Power or Bio-CNG (CBG) Purchase Agreement.
- 9.4. Agreement for sale of bio-fertilizers
- 9.5. Consent to Establish from Pollution Control Boards for Waste to Energy plant.
- 9.6. Approval for layout of the Bio-CNG Plant from Petroleum and Explosives Safety Organization (PESO), Nagpur

(for the documents not submitted kindly provide latest status below)

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SUBMISSION

Detailed Project Report (DPR) and the complete Application and Detailed Innovation Report (DIR) (Annexure – I) duly filled following the instructions given are required to be submitted in the pdf document format on owte-india@unido.org email address before 05:30 pm (IST) on 31 August 2021.