Biogas Market in India

Presented by,
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Program Head

Indian Biogas Association
Contents

• About Indian Biogas Association
• Specs of Bio-methane
• End-Usage
• Typical Feedstocks
• Biogas plant types in India
• Statistics on existing Indian biogas plants
• Glimpse of Biogas Potential in India
• Biogas Industry’s Stakeholders
• Policy incentives
• Inter-Ministerial framework
• Clearance and permits needed
• Challenges in Indian Biogas Industry
• Case Studies

www.biogas-india.com
Introduction to Indian Biogas Association (IBA)

• Headquarters: Gurgaon

• First nationwide and professional biogas association, established in 2011

• Supports and represents the stakeholders:
  • Operators,
  • Manufacturers,
  • Planners,
  • Representatives from public bodies,
  • Science and research, and
  • All other environmental enthusiasts.

• In Partnership with German Biogas Association (BIG-P)

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Members of IBA

SOME OF OUR KEY MEMBERS

GAIL
encare
Mahindra Rise
ATMOS POWER
BHS Sonthofen
ikos MAILHEM
praj
Vogelsang
BAUER KOMPRESSOREN
PAQUES
agraferm
Arka BIO2Tech Pvt. Ltd.
Position paper on scope of digestate in FCO

Inputs for optimal price of CBG under SATAT scheme

Critical inputs Standards’ draft prepared by TERI

Position paper on GBI

Provision towards setting-up demo CBG plant by OMCs

Working on inputs for Gas-grid insertion of biomethane

Inclusion of bio-slurry in FCO

Basic Biogas Training for govt. executives
New launches of IBA (2017-2018)

Magazines

Biogas Brochure
Published by IBA

Digestate Brochure
Published by GBA

Mobile App

www.biogas-india.com
Biogas Lab

Key Features:
- Located at IIT-BHU, Varanasi
- Comprehensive testing facility
- State of the Art laboratory
- Cross Disciplinary
- Regional Labs to be set-up

Working Domains:
- Laboratory Analytics
- Yield Optimization
- Study of Substrates
- Feedstock Analysis

Tests:
- Dry Matter (DM)
- Organic Dry Matter (oDM)
- Biomethane Potential
- Total Alkanity (TAC)
- Total Volatile Fatty Acids
- FOS/TAC
- NH4-N_{tot}
- H2S_{tot}
- BOD
- COD
- Acid Spectrum (C2-C6)
- Phosphorus (P2O5)
- Potassium (K2O)
- Total Organic Carbon (TOC)
Feasibility Assessment

✓ Site Assessment:
  • Analysis of different available feedstock in project vicinity
  • Land identification and its suitability
  • Utility mapping of frozen site
  • Overall demand mapping and assessing off-take feasibility
  • Socio-economical analysis
  • Identification and earmarking the relevant stakeholders

✓ Financial Feasibility
  • Capex, Opex Estimates
  • Free Cash Flow Analysis
  • Financial Appraisal- Profitability, Liquidity, Leverage, Project Returns
  • Sensitivity Analysis

✓ Technical Recommendations
  • Comparison with contemporary technologies
  • Specific Technology recommendation across the process steps
  • Mapping with probable equipment suppliers

✓ Risk Analysis and Overall Recommendations:
  • Setting up the overall project schedule (micro/macro level planning)
  • Listing project specific permissions and clearance requirement
  • Recommendation for optimal business model
  • Scenario Analysis, overall risk assessment and mitigation plan—feedstock, offtake, social, technical, regulatory
<table>
<thead>
<tr>
<th>Initiative</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make in India</td>
<td>- Manufacturing to become 25% of GDP by 2025.</td>
</tr>
<tr>
<td></td>
<td>- Reduced Corporate Tax rates</td>
</tr>
<tr>
<td></td>
<td>- 100% FDI under automatic route in RE</td>
</tr>
<tr>
<td>Swachh Bharat Mission</td>
<td>- Open Defecation free districts</td>
</tr>
<tr>
<td></td>
<td>- Scientific Waste Management-SWM rules 2016,</td>
</tr>
<tr>
<td>Smart Cities</td>
<td>- 100 Smart Cities by 2020</td>
</tr>
<tr>
<td>Power for ALL</td>
<td>- 24X7 Power for all by 2022</td>
</tr>
<tr>
<td>Voluntary Targets at Int. forum-</td>
<td>- Renewable Energy to 175 GW by 2022</td>
</tr>
<tr>
<td>Nationally Determined Contributions</td>
<td>- Emissions reduction by 33%-35% by 2030 (2005 base),</td>
</tr>
<tr>
<td></td>
<td>- Non fossil fuel mix in power to 40 % 2030</td>
</tr>
<tr>
<td>Oil Import</td>
<td>- By 2022, reduction of oil imports by 10% from 2014-15 levels</td>
</tr>
</tbody>
</table>
• Cow Dung, poultry litter, horse dung, etc.
• Agricultural residues as rice straw, wheat straw, banana stem, maize stalks
• Industrial byproduct—Sugar mill press mud, Distilleries spent wash, Sago plant effluent
• Municipal Solid Waste, slaughter house waste, vegetable market waste, kitchen waste
Biogas Utilization

1. Organic Waste Recycling
   - Biogas Plant
   - Biogas
   - Bio-slurry
   - Direct Use

2. Scientific Waste Management
   - Compression
   - Pipe Gas
   - Transportation
   - Electricity
   - Thermal

3. Fertilizer
**Specs. of Biomethane (as per BIS)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Range</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH₄, percent, Min</td>
<td>&gt;90</td>
<td>IS 15130 (Part 3)</td>
</tr>
<tr>
<td>Moisture, mg/m³, Max</td>
<td>&lt;16</td>
<td>IS 15641 (Part 2)</td>
</tr>
<tr>
<td>H₂S, mg/m³, Max</td>
<td>&lt;30.3</td>
<td>ISO 6326-3</td>
</tr>
<tr>
<td>CO₂+N₂+O₂, percent, 10 IS 15130 (Part 3) Max (v/v)</td>
<td>&lt;10</td>
<td>IS 15130 (Part 3)</td>
</tr>
<tr>
<td>CO₂, percent, Max (v/v)</td>
<td>&lt;4</td>
<td>IS 15130 (Part 3)</td>
</tr>
<tr>
<td></td>
<td>(when intended for filling in cylinders)</td>
<td></td>
</tr>
<tr>
<td>O₂, percent, Max (v/v)</td>
<td>&lt;0.5</td>
<td>IS 15130 (Part 3)</td>
</tr>
</tbody>
</table>

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Biogas Plants Type in India

House-hold based (1-25 m³/day)

Community based Biogas Plant (20-1000 m³/day)

Large Scale Biogas Plant (>2500 m³/day)

Commonly used technology:
- Fixed Dome- Janta Model, Deenabandhu Model
- Floating Dome-KVIC, FRP based,

Commonly used technology:
- KVIC, Nisarguna (BARC), decentralized containerized solution

Commonly used technology:
- UASB, CSTR, Plug-Flow Type, Lagoon type
Digestion Technologies

- **Domestic biogas digesters** (small scale)
- **(Covered) Lagoon digesters**
- **Garage or Batch**
- **CSTR and Plug-flow**
- **Biomethane (Bio-CNG/Biogas upgradation)**

<table>
<thead>
<tr>
<th>Low-Tech solutions</th>
<th>High-tech solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td>✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓</td>
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<tr>
<td>✓ ✓ ✓</td>
<td>✓</td>
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<tr>
<td>✓ ✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

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Status of Small Scale Plants (<2m³/day) in India

**Status of Off-Grid / Grid Connected Biogas Plants in India**

**Grid connected Biogas plants (>250 KW)**

- Number of grid connected biogas plants over the years:
  - 2008: 39
  - 2009: 48
  - 2010: 56
  - 2011: 67
  - 2012: 141
  - 2013: 141
  - 2014: 152
  - 2015: 147
  - 2016: 147
  - 2017: 152

**Off-grid Biogas plants (< 250 KW)**

- Number of off-grid electric generating biogas plants:
  - Yearly Installed Electrical capacity:
    - 2012: 147 MW
    - 2013: 170 MW
    - 2014: 188 MW
    - 2015: 220 MW
    - 2016: 241 MW
    - 2017: 260 MW


*Beginning period taken as 2012 due to inconsistent data in earlier years*
## Biogas Plants across segments

<table>
<thead>
<tr>
<th>Scale of the plant</th>
<th>Definition</th>
<th>Installation Base (September 2019)</th>
<th>Estimated Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Biogas plant</strong></td>
<td>biogas plants between 1 to 25 cubic meter/day</td>
<td>Cumulative total of 5.028 million family type biogas plants</td>
<td>Estimated potential of 12 million family plants</td>
</tr>
<tr>
<td><strong>Medium Biogas plant</strong></td>
<td>Power generation capacity between 3 KW to 250 KW</td>
<td>About 300 plants (cumulative capacity~6 MW_{el})</td>
<td>insignificant available data to be sized</td>
</tr>
<tr>
<td><strong>Large Biogas plant</strong></td>
<td>Eq. Power generation capacity above 250 KW(_{el}) or, 3000 m(^3)/day of raw biogas</td>
<td><del>190 large scale installations with cumulative Capacity</del> 280 MW_{el.}</td>
<td>Overall Potential: ~ 35,000 MW(_{el})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Just from Municipal wastes ~5000 MW(_{el}).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Potential from industrial solid sludge and liquid effluent ~ 2,000 MW</td>
</tr>
<tr>
<td><strong>Biomethane plants</strong></td>
<td>Plants based on different upgradation/ purification technologies</td>
<td>Presently around 90 plants</td>
<td>All upcoming projects shall have upgradation facility</td>
</tr>
<tr>
<td>(Compressed Biogas)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Potential Business Cases (I)

<table>
<thead>
<tr>
<th>Industries</th>
<th>Prominent Wastes Generated</th>
<th>Treatment Option</th>
<th>Potential (in MW&lt;sub&gt;el.&lt;/sub&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar Mills</td>
<td>Sugar bagasse</td>
<td>Combustion and Gasification/ Cogeneration</td>
<td>410</td>
</tr>
<tr>
<td></td>
<td>Pressmud</td>
<td>Biomethanation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar molasses</td>
<td>Fermentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fermentative Yeast biomass</td>
<td>Biomethanation</td>
<td></td>
</tr>
<tr>
<td>Slaughter houses</td>
<td>Organs, Tissues, Blood, Hides, Animal excreta and Carcass etc</td>
<td>Biomethanation</td>
<td>98</td>
</tr>
<tr>
<td>Paper mills</td>
<td>Pulp</td>
<td>Biomethanation/Cogeneration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paper shavings</td>
<td>Combustion</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Wood wastes and Paper boards</td>
<td>Combustion and gasification</td>
<td></td>
</tr>
</tbody>
</table>

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## Potential Business Cases (II)

<table>
<thead>
<tr>
<th>Industries</th>
<th>Prominent Wastes Generated</th>
<th>Treatment Option</th>
<th>Estimated Potential (in MW&lt;sub&gt;e&lt;/sub&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy Plants</td>
<td>Whey and Milk cream</td>
<td>Biomethanation</td>
<td>72</td>
</tr>
<tr>
<td>Starch/Sago factories</td>
<td>Starch materials and peels</td>
<td>Biomethanation</td>
<td>145</td>
</tr>
<tr>
<td>Tanneries</td>
<td>Hides and skins</td>
<td>Acid treatments and biomethanation</td>
<td>8</td>
</tr>
<tr>
<td>Argo-residue</td>
<td>Wheat and Paddy Harvest</td>
<td>Biomethanation</td>
<td>10,100</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>Manure</td>
<td>Biomethanation</td>
<td>7,450</td>
</tr>
<tr>
<td>Segregated MSW</td>
<td>Segregated organics-Household, Vegetable Yard, Restaurants, Commercial Estates</td>
<td>Biomethanation</td>
<td>4,950</td>
</tr>
<tr>
<td>Distilleries</td>
<td>Spent Wash</td>
<td>Biomethanation</td>
<td>550</td>
</tr>
</tbody>
</table>
Stakeholders of Biogas

**Policy**
- Centre
- State
- Municipal Bodies

**Economy**
- Farmers
- Company
- Associations
- Standard Bodies

**Academia**
- Research Organizations
- Training Institutes
- Universities

**Finance**
- Banks
- Subsidy, MSP
- Funds
- Other Innovative Instruments

**Society**
- NGO
- Public
- Social Entities
Policy Support for Biogas sector (I)

FINANCIAL

- Concessional rates of 5% GST for:
  - Biogas production
  - Equipment procurement for biogas projects
- BCD of 5% for imported equipment for biogas projects
- 40% Accelerated depreciation on WDV method
- **Feed in Tariff** (~10 cents/ Kwhr) by CERC for biogas based WTE projects
- **Tax holiday** on Net Income up to 10 years (for end use as power > 1 MMel)
- **Central Financial Assistance** (CFA) for projects of different categories:
  - National Biogas and Manure Management Program (NBMMP): 1-25 m³
  - Biogas Power (off-grid) programme (BPP): 3-250 kW
  - Waste to Energy projects: 250 kW+
Policy Support for Biogas sector (II)

INTER-MINISTRIAL

• SATAT (Sustainable Alternative Towards Affordable Transportation)
  ➢ Secured offtake of Compressed Biomethane for 10 years.
  ➢ Upward price revision every three years
• Electricity Policy - Distribution Licensee/ Discoms to compulsorily procure 100% power (RPO) produced from all the Waste-to-Energy plants
• Motor vehicles rule: Provisions made by Ministry of Road Transport and Highways for usage of biogas (Bio-CNG) in motor vehicles
• Biogas standards by BIS - Composition of biogas for applications in engines, automotive, and piped network

INSTITUTIONAL

• Implementation bodies State Nodal Departments/ State Nodal Agencies, KVIC
• Introduction of Eight BDTCs as knowledge hubs for Biogas programmes
Inter Ministerial Policies

Guiding Policies

- Fertilizer Control Order
- BIS Standards
- SBM, MSW Handling rules
- CERC guidelines, Electricity Policy
- Bio-Fuel Policy/ SATAT
- Motor Vehicles Act
- Solid Waste Management rules
- Technical Specs and controlling means of organic fertilizer

Composition of biogas for automotive and piped network

Opportunity for bio-toilets, Modern and Scientific Management of MSW paves way for bio-methanation

Generalized tariff for electricity for Biogas based WTE projects, RPO for distribution licensee, issuance of REC

Increased usage & promotion of bio-fuel. Assured offtake of Bio-CNG by OMCs

Bio-CNG permitted for motor vehicles as an alternative to CNG

At source organic waste processing through composting, bio-methanation. Defines role of other ministry

Usage of Biogas and by products

<table>
<thead>
<tr>
<th>Involved Ministry</th>
<th>Thermal</th>
<th>Electric</th>
<th>Transport</th>
<th>Organic Manure</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoAFW/ MoCF</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>MoCA</td>
<td></td>
<td>✓</td>
<td></td>
<td>?</td>
</tr>
<tr>
<td>MoUD</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MoP</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MoPNG</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MoRTH</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>MoEF</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Other Supporting Ministries and bodies

MoRD, MoCI (PESO), MSME(KVIC), MoF (IREDA, NCEF, NABARD)
**Policy Support for Biogas sector**

### Scale of Biogas plant

<table>
<thead>
<tr>
<th>Region</th>
<th>1 m³ (Subsidy in INR)</th>
<th>2-6 m³ (Subsidy in INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE States</td>
<td>17000</td>
<td>22000</td>
</tr>
<tr>
<td>General</td>
<td>7500</td>
<td>12000</td>
</tr>
<tr>
<td>Toilet linked Biogas Plants</td>
<td>1600 (Additional subsidy)</td>
<td></td>
</tr>
</tbody>
</table>

| Turn-Key Fee (5 year warranty) | 2500 per plant (1-10 m³) | 4500 per plant (15-25 m³) |

### Biogas Power (Off-grid) Programme (BPP)

- **Biogas Power (Off-grid) Programme (BPP)**

### Waste/Process/Technology

- **Subsidy (in INR)**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Waste/Process/Technology</th>
<th>Subsidy (in INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-20 kW_{el}</td>
<td><em>Bio-CNG from MSW</em></td>
<td>40,000/kW**</td>
</tr>
<tr>
<td>20-100 kW_{el}</td>
<td>Power generation based on biogas produced from Urban/Agro Waste or production of bio-CNG</td>
<td>35,000/kW**</td>
</tr>
<tr>
<td>100-250 kW_{el}</td>
<td>Only Biogas generation from Urban, Industrial and Agricultural waste/residue</td>
<td>30,000/kW**</td>
</tr>
</tbody>
</table>

### Programme on Energy from Urban, Industrial and Agricultural Wastes/Residues

- **For BPP, Thermal Subsidy is 50% of above rates**

- **Subsidy (in INR)**

  - **4 crore/MWeq (max. 10 crore per project)**
  - **3 crore/MWeq (max. 10 crore/project)**
  - **1 crore/MWeq (max. 10 crore/project)**
  - **4 crore/MWeq (max. 10 crore/project)**

### Notes:

- Presently the subsidy amount is 4 cr/ MW_{el}. Prospectively its on cards to increase it to 5 cr/ MW_{el}.
- Rates defined are for SC/SCT and NER states; for general states specific cost is 5000/kW lesser across all scale.
- For only cattle dung based projects, limit of > 250 KW holds good.
Topics which should be considered regarding permissions for biogas plants:

- Pollution control
- NOC from Municipal corporation or Gram Panchayat
- PESO
- Electricity connection
- Water connection
- Factory license from inspector of factories
- Change of Land of use
- NOC from SEB

Get informed on the permission procedures for your country/area

Involve authorities right from the start

(Consent to Establish & Consent to Operate)

What has to be fulfilled in order to get an approval?
What kind of information is needed?
# Challenges in Indian Biogas Industry

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Mitigation Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Social Stigma (NIMBY syndrome)</td>
<td>• Promoting Awareness, Reaching last mile with NGOs</td>
</tr>
<tr>
<td>• Market for organic manure missing</td>
<td>• Work on amendment to FCO, Dept. of Fertilizer</td>
</tr>
<tr>
<td>• Nascent Market with limited players</td>
<td>• Awareness building, collaboration with Academic Institutes</td>
</tr>
<tr>
<td>• Feedstock security/Repeated break in Supply Chain</td>
<td>• Resource Mapping, emphasis on pre-feasibility</td>
</tr>
<tr>
<td>• Non-Segregated waste supply</td>
<td>• Pan-India adaptation of SWM rules</td>
</tr>
<tr>
<td>• Availability of Skilled Manpower</td>
<td>• Capacity Building, Tailor made courses</td>
</tr>
<tr>
<td>• Insecurity over business viability</td>
<td>• Securing off-take, roping in OMCs</td>
</tr>
<tr>
<td>• Lack of credibility of customers</td>
<td>• Due diligence, Certification of players</td>
</tr>
<tr>
<td>• Access to loans from FI</td>
<td>• Priority Sector lending, Innovative Financial Models</td>
</tr>
<tr>
<td>• Higher capital cost/payback period</td>
<td>• Market development, Fostering Industry-Institute Partnership</td>
</tr>
<tr>
<td>• Inclination towards power based projects</td>
<td>• Balance of centralized and decentralized tech.</td>
</tr>
<tr>
<td>• Lack of concrete Standardization</td>
<td>• Expedite development of Indian Standards</td>
</tr>
<tr>
<td>• Non Synchronous Centre and State Policies</td>
<td>• Building regional working groups to work on local policies</td>
</tr>
<tr>
<td>• Lengthier subsidy sanction method of MNRE</td>
<td>• Performance based Incentives shall induce faster clearances</td>
</tr>
</tbody>
</table>

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Project details:
1 MW high-rate bio-methanation plant based on cattle manure

- Location: Haebowal Dairy Complex, Ludhiana, Punjab, India
- Project: Site Type: Dairy Complex
- Waste Collection: Collected manually from local Gaushalas
- Digester Type: Intermittently stirred tank reactors based on biogas-induced mixing arrangement
- Gas Storage: 1000 CUM (bell and shell type made of neoprene coated nylon fabric

- Owner: PEDA, Punjab
- Digester Volume: 2X5000 CUM
- Feedstock: Cattle Manure 200 MT/day
- Year of commissioning: Sept, 2004
- System Designer: ENTEC- Austria
- End Use: Power generation
**Case Study (II)**

**Project details:**
14000 m$^3$ Biogas plant from dung, vegetable waste, and press mud

- **Location:** Umreth, Vadodara, Gujarat
- **Site Type:** Rural Locality
- **Waste Collection:** Dung collection from dairy, discarded potato pulp and press mud from local industries.
- **Technology:** CSTR based biogas plant, up-gradation facility (MPSA) and CNG filling station

- **Owner:** Bharat Biogas Energy Limited
- **Digester Volume:** 2X 6000 m$^3$
- **Feedstock:** Dung, press mud, and potato pulp
- **Year of commissioning:** Nov, 2015
- **End Use:** Bio-CNG for industrial use. Fertilizer processed, conditioned and sold to the market with defined nutrients
Case Study (III)

Project details:
3000 Kg/ Day bio-CNG based on sewerage waste water

- Location: Delawas, Jaipur, India
- Site Type: STP
- Waste Collection: Sewerage waste water from 25Km surrounding
- Technology: Activated Sludge Process with anaerobic Digester and centrifuge unit
- Digester Volume: 2X 3500 m³

- Owner: Jaipur Municipal Corporation
- Feedstock: 125 MLD sewerage water
- Year of commissioning: July 2010
- System Designer: VA-Tech Wabag
- End Use: 3,000 kg/day from 8,400 m³/day of Bio-CNG. Captive Power generation from remaining.
Case Study (IV)

Project details:
8000 kg/day
Bio-CNG producing biomethanation plant based on press mud

- Location: Kolhapur Maharashtra, India
- Site Type: Nearby Sugar processing plants
- Waste Collection: Collected from nearby sugar processing plants and fed through conveyer system
- Technology: Three CSTR type reactors of 3000 m³ each operating at mesophilic temperature

- Owner: Spectrum Renewable Energy Limited
- Feedstock: 100 TPD press mud and spent wash
- Year of commissioning: 2012
- Gas Storage Capacity: double membrane type of 950 CUM
- End Use: Bio-CNG and Bio Manure
Case Study (V)

Project details:
25 KW
decentralized
Biogas to Power
Project from
MSW

- Location: Model Colony, Pune, Maharashtra, India
- Site Type: Urban Locality
- Waste Collection: Wet waste
- Collected by Pune Municipal Corporation from nearby establishments (vegetable markets, hotels, colonies)
- Technology: Two stage digestion with aeration, biogas & leachate recirculation facility
- Owner: Pune Municipal Corporation
- Digester Volume: 200 m³
- Feedstock: Segregated Organic from MSW (~5 Tons/day)
- Gas Storage: 2 Nos of 75 CUM each in neoprene rubber with enclosure
- Year of commissioning: Nov, 2009
- End Use- Illumination of street lights and organic manure used for horticulture
Biogas Plants provide 3 in 1 solution:
  - Biomass waste Treatment Plant, bio-fuel generation Plant and Organic fertilizer production Plant.

Long history of Biogas in India

Share of biogas/WtE in Energy mix is extremely low

Govt. support available across scale of biogas plant

Solution for India-
  - Mix of centralized and decentralized approach

Immense opportunities lies in
  - Utilizing diverse range of available substrates
    - Organic fertilizer production

Wider spectrum of shareholders

Ample Success stories for replication across India
BIO-ENERGY Pavilion 2020

September 23-25

Renewable Energy India Expo, India Expo Mart, Greater Noida

Organised by Indian Biogas Association

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