

## General Studies – 1 Topic: Urbanization – problems and remedies

### Biomethanation

#### 1) Introduction

- Biomethanation is a process by which organic material is microbiologically converted under anaerobic conditions to biogas.
- Microorganisms degrade organic matter via cascades of biochemical conversions to methane and carbon dioxide.
- Biomethanation has strong potential for the production of energy from organic residues and wastes.

#### 2) Biomethanation

- Biodegradable component of India's municipal solid waste is currently estimated at a little over 50 per cent.
- Biomethanation offers a major solution for processing biodegradable waste.
- Biomethanation process degrades biological or organic compounds to generate biogas and manure.

#### 3) Uses of Biomethanation

- The energy from waste is a crucial element of waste management because it reduces the volume of waste for disposal and also helps in converting the waste into renewable energy and organic manure.
- Decentralised plants provide a major energy saving from reduced transportation and also generate additional annual revenue from electricity generation besides meeting their own demand for electricity.
- The gas that is obtained can be used as an alternate fuel for natural gas vehicles or can replace other fossil fuels such as LPG/CNG and diesel.
- Organic Manure generated by it can be utilised for regenerating soil health & will also provide additional income to municipalities by sale of manure.
- Reduction in waste volume also reduces land requirements for dumping of wastes.
- Reduced Greenhouse Gas Emissions - Stopping release of Methane in to the atmosphere per day per plant which is 22 times danger than CO<sub>2</sub> for Global Warming.
- Modular construction of plant and closed treatment needs less land area

#### 4) Challenges

- Energy generation though this process is less economical & efficient.
- Process requires maintenance which may increase financial burden on municipalities.
- Segregation of wastes at households is highly neglected practice.
- Maintaining adequate safety standards is important failing which can lead to dangerous effects because leakage of methane gas will boost global warming
- It is more capital intensive compared to composting and landfill
- Not suitable for wastes containing less biodegradable matter.

#### 5) Waste Management

- Ministry of Environment and Forests has notified the new Solid Waste Management Rules, 2016 with clear responsibilities assigned to various classes of consumers.
- Urban governments should show the political will to rein in bulk generators of municipal solid waste.

- Segregation of waste need to be rigorously enforced.
- Cess funds collected for the Swachh Bharat programme could be deployed to scale up infrastructure for composting, Biomethanation and recycling
- The central monitoring committee under the Ministry of Environment and Forests should ensure that local bodies do not continue functioning in business-as-usual mode.
- The Ministry should also enlist the services of rag pickers under formal systems such as cooperatives.

### 6) Problems in waste management

- In India, the segregation of waste at source is rare.
- Recycling is mostly with the informal sector, although some municipalities are trying to integrate this sector into their waste management systems.
- More than three-fourths of the municipal budget on solid waste management goes into collection and transportation, which leaves very little for processing/resource recovery and disposal.
- Lack of awareness, in our cities, of the hugely adverse impacts of poor waste disposal on the air we breathe and the water we drink.
- Less than a third of the collected waste is being processed.
- Even where environmentally conscious citizens segregate at source, the chain of management dumps it all in landfills.

### 7) Need of the Hour

- Segregating municipal solid waste (be it households or commercial establishments) is the first step in ensuring the success of waste-to-energy plants.
- Ensure that the waste goes through the different streams of recycling and resource recovery till the much reduced final residual is deposited scientifically in sanitary landfills.
- Decentralised small -scale Biomethanation cum power generation plants

### 8) Conclusion

- If India could start with the separation of its 'wet' waste from the rest and produce good compost that could transform cities and towns into clean and green havens filled with trees, gardens, lakes and rivers.
- Garbology studies confirm that landfills swallow precious wealth every day. The time has come to recover it.