



Waste-to-Energy Plants

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According to a recent study by the Centre for Science and Environment (CSE), **nearly half of India's waste-to-energy (WTE) plants**, meant to convert non-biodegradable waste, **are defunct**.

- Moreover, the existing plants are functioning at **low capacity**.
Since 1987, 15 WTE plants have been set up across the country. However, seven of these plants have since shut down.
- The key reasons for closure are the plants' **inability to handle mixed solid waste** and the **high cost of electricity** generated by them that renders it unattractive to power companies.
 - MSW (municipal solid waste) in India has **low calorific value** and **high moisture content**.
 - As most wastes sent to the WTE plants are **unsegregated**, they also have high inert content (inert materials like soil, sand, grit, etc).
 - These wastes are **not suitable for burning**, and therefore to burn them, **additional fuel is required** which makes these plants **expensive to run**.
- Despite this, the **NITI Aayog**, as part of the Swachh Bharat Mission, **envisages 800 Mega Watt** from WTE plants by 2018-19, which is **10 times the capacity** of all the existing WTE plants put together.
It even proposes setting up a **Waste-to-Energy Corporation of India**, which would construct incineration plants through PPP models.

Waste-to-Energy Plants

- A waste-to-energy or energy-from-waste plant **converts municipal and industrial solid waste into electricity and/or heat for industrial processing**.
- The energy plant works by burning waste at **high temperatures** and using the heat to make steam. The steam then drives a turbine that creates electricity.
- Apart from producing electricity, burning waste **also reduces the amount of material** that would probably be buried in landfills. Burning MSW **reduces the volume of waste by about 80%**. Thereby offering a number of **social and economic**

benefits that cannot easily be quantified.

Advantages

- Most wastes that are generated find their way into land and water bodies without proper treatment, causing **severe water and air pollution**.
- Waste to energy generates **clean, reliable energy from a renewable fuel source**, thus **reducing dependence on fossil fuels**, the combustion of which is a **major contributor to Greenhouse Gas (GHG) emissions**.
- In addition to energy generation, waste-to-energy can **fetch significant other benefits** like:
 - Success in municipal solid waste management could lead to opportunities in **other waste such as sewage waste, industrial waste and hazardous waste**.
 - Waste to Energy opportunities exist not just in India but all over the world. Thus, there could be **significant international expansion possibilities for Indian companies**, especially expansion into other Asian countries.

Challenges

- Waste-to-Energy is **still a new concept** in India.
Most of the proven and commercial technologies in respect of urban wastes are required to be **imported**.
- The **costs of the projects are high** as critical equipment for a project is required to be imported.
- In view of **low level of compliance of Solid Waste Management Rules, 2016** by the Municipal Corporations/ Urban Local Bodies, segregated municipal solid waste is generally not available at the plant site, which leads to non-availability of waste-to-energy plants.
- **Lack of financial resources** with Municipal Corporations/Urban Local Bodies.
- **Lack of conducive policy guidelines** from State Governments in respect of allotment of land, supply of garbage and power purchase / evacuation facilities.
- The WTEs have also **triggered widespread criticism from citizens**. For instance, there has been a continuous protest against the Okhla WTE plant in Delhi for polluting the environment.

Way Forward

- In the context of **climate change, focus on renewable source of energy and burgeoning population**, the WTEs approach is needed to address the **growing energy need in a sustainable way**. However, it is also important to ensure their **effectiveness**.
- For this, **Urban local bodies (ULBs) should invest** in preparing an action plan on

waste management in **accordance with the Solid Waste Management (SWM) rules, 2016** within a time-bound approach and promote and adopt the key elements of waste hierarchy as **refuse, reduce, reuse, recycle and recover**.

- It is also important to focus on **segregation at source, spreading awareness, preparing an action plan** for the city for waste management by adopting decentralised technologies. This will not only improve effectiveness of WTEs, but will also ensure protection and improvement of our environment as **envisaged in Article 51 A(g) of our Constitution**.