



# ROLE OF FEASIBLE TECHNIQUES IN FOOD WASTE MANAGEMENT

Anita Bhawariya Research scholar university of Rajasthan

**Abstract:** Food waste indicates a significant municipal solid garbage. Proper management and recycle of extremely large volumes of food waste are crucial to decrease its on earth load and to minimize hazards to human health. Food wastage is in fact an unexploited resource contends with considerable developing for bio fuel production. Every piece of food wasted is an opportunity lost to improve world hunger and global food security. The literature arranges the current knowledge revealed in use of technologies for food-waste-to-bio fuel involving biological method is anaerobic digestion and fermentation, thermal and thermochemical technologies is incineration, pyrolysis, gasification and hydrothermal oxidation. Challenges food waste management currently constitute by various aspect -recycling of waste is very poor, lack of trainers and there is a lack of treatment facilities, lack of budget and lack of interest. Anaerobic digestion for the Indian society could be acceptable techniques for recycle of bio-waste.

Keyword: waste management ,food ,technologies

## Introduction

Every year, world food day is celebrated on 16 October. On the day we are tackling global hunger and efforts to reduce hunger all the world .but Query arises are we learning from the food day not to waste food in order to tackle hunger. According Food production around the world falls well short of what is consumed there. According to the UNEP's (United Nations Environment Programme) food wastage index report, 68,760,163 tonnes of food is wasted annually in Indian homes, or approximately 50 kilograms per person. According to the FSSAI (Food Safety and Standards Authority of India), one-third of all food in India is wasted or gets spoilt before it is eaten. According to the UNEP Food Waste Index Report 2021, household food waste in India is estimated to be around 50 kg per person annually, or 68.76 million tonnes. A recent study conducted by Indian Institute of Management, This indicates inappropriate supply management contribution toward food wastage in India both at pre harvest and post-harvest for example pulses, fruits, cereals and vegetables turn into waste (approx. cost) due to unavailability of cold storage system and as well as appropriate food processing industry. India, being a agriculture based economy and the highest food producer yet its population face starvation and malnourished. (UN agency Sub-Saharan Africa has the highest percentage of population with lack of enough food). Two major reasons behind it are; shortfall in the food produced worldwide and large amount food wastage phenomenon occurring. Looking further into these reasons, today the world is yielding one and half times more for an individual, roughly that is enough to feed close to 10 billion people. Despite this massive number, people across the globe don't have sufficient food.

## Food waste management techniques

### 1.Domestic technologies

**1.1 Reducing:** By recovering, reusing, and recycling materials/items/components, There are a lot of advantages in reducing the usage of new resources and reusing recovered items. First of all, it helps to avoid using virgin products and preserves natural resources. Secondly, it facilitates the usage of recovered components or parts over and over again. Thirdly, it reduces the procurement expenses by cutting down on new resources. Fourthly and the most importantly it avoids unwanted wastes, avoids land filling and also brings down the pollution level.

**1.2.Reuse-** This level seeks towards saving food at first place of our utilization. Proper planning should be executed to avoid overproduction scenarios. Better storage conditions should be adopted in order to stretch the shelf life of the product. The alternative market should be discovered in order to keep food in human food chain.

**1.3.Recycling:** Recycling is the process of converting the old and used materials/components/items/parts for a new use, for the same purpose or for some other purpose.

**1.4.Composting-** Composting method contain decompose of biotic MSW by micro organisms under controlled aerobic conditions i.e. in the existence of air under humid and warm environment surroundings .This method is divided into two different processes i.e. aerobic and anaerobic compost. The last product of composting is more excessive nutrients called humus or compost. This type of compost highly advantage for using in crops for fertilize, combination of methane and carbon dioxide called bio gas, is using for generating fuel.

**1.5. Anaerobic digestion** :- This procedure is called a process of bio-methanation. In this process, bio-degradable waste is composed by microorganisms in the environment of anaerobic. This digestive process is decrease quantity of wastage and producing biogas (methane and carbon dioxide) bio gas is apply for heat and electricity generate. The gas can be used in place of conventional fuels like LPG or CNG. Many bio-methanation plants are working to produce energy from vegetable and food waste Present time in India

**1.6. People in need** - Surplus food should be directed to organizations and charities which can redistribute the food.

**1.7. Feed livestock**- Food which is unfit for population consumption should be feed to directed to farm animals. (permissible bakery, fruit, vegetables and dairy products etc.)

**1.8. Disposal**- Unavoidable food should not be buried inside the land as there as environment friendly alternatives are available.

## 2. Industrial Technology

### 2.1. Thermal technology

Incineration, pyrolysis, gasification and refused derived fuel (RDF) are included in thermal technologies of waste. In this process, numerous by products are formed that can be referred to different energy generation and resource recovery techniques for treatment.

**1.1 Incineration:** The waste management technology is incineration, in which large scale waste is decrease by incineration 70% and waste quantity is decreased to 90%. Incineration is e for more calorific worth wastes. This process, assemble energy is turn to electricity generation. The process carried out in three phases (A) Incineration (B) Energy recovery (C) Control of air pollution. In the first step solid waste is direct burned at 700-1000oC in the combustion chamber by using flue gas and preheated temperature. After combustion waste is produce ultra-hot steam and this exhalation is used to produce heat energy. Turbine is attached to generator make energy, heat and ash. Ash primary amount of silicon, iron, calcium, aluminium, sodium and potassium.

The second phase of incineration process are retrieved Ultra Heat and power. The largest drawback of incineration is the produce of greenhouse gases. Thus, important concern to establish radiation control instrument to the incinerator, the third stage of incineration process and this technology for Indian municipal solid Generally in India small incinerators are applying for blazing of health centre. Still, at Delhi a medium size of incinerator plant was installed to destroy of 300 tonnes of day-to-day waste, India in 1987.

**1.2. Pyrolysis-** This method is thermal waste techniques. In this method give out organic compound in the anaerobic process through temperature at 300-800 C. Pyrolysis method produces the methane, hydrocarbons, carbon dioxide, hydrogen and carbon mono-oxide, liquids and solids residues. This type of gases used in many types of energy instruments such as, boilers, turbines, engines, heat pumps. Pyrolysis can also be used to produce a synthetic diesel fuel from plastic waste by small temperature and currently pyrolysis technique not working in India.

**1.3. Gasification** -This process limited combustion produce energy from garbage. This is highly skilled by providing high temperature (>700oC) with a average quantity of air (i.e. partial combustion). In the process ending outcomes are tar syngas and char. Syngas is full energy and clean through gas turbine or engine to production of power and heat. Gasification process reduce 90% waste amount and 70% mass. Little units of gasifiers were implemented in India, mostly used to burn agri biomaterial. This technology implements in our India limited number of plants such as First is NERIFIER gasifier agrobiomass, sawmill dust and forest dust. Second is TERI gasifier installed at Gaul Pahari Campus, New Delhi by Tata Energy Research Institute (TERI) .

**1.4. Refuse-derived Fuel (RDF)** RDF technology stipulates safe and eco-friendly disposal of MSW. It is an alternating fuel which can be used in boilers in place of fossil fuels. A hardly number of RDF plants were establish in India .

## CONCLUSION

To reduce fuel scarcity, natural pollution and meet the energy demands one of the best techniques is to replace non-renewable resource with renewable resource. Various researches have done to identified the best method /technique of replace renewable sources, most important thing is wastage for biodiesel generating. Wastage like sewage sludge, industrial waste, waste kitchen waste, cooking oil etc., Waste to energy technologies such as domestic technologies (3Rs reduce, reuse, recycle, composting, anaerobic/bio-methanation process) and industrial technologies (incineration, pyrolysis, gasification refused derived fuel) to utilize kitchen food waste for biodiesel production electricity generating has been initiated. There is a need to develop environmental awareness and change the manner of people regarding waste for sustainable waste management systems. Presently government and citizens of India are trying to take various actions regarding solid waste management and to generate energy from waste. Until these activities are met, India will remain to suffer from improper waste management and many Environment impact and health hazards to the people

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