



## HOUSEHOLD FOOD WASTE MANAGEMENT: AN OVERVIEW

Rashmi N. Raut<sup>1</sup>, Jyotsna A. Patil<sup>2</sup> and Nishikant A. Raut<sup>3</sup>

<sup>1</sup>Dept. of Home Science, RTM Nagpur University, Nagpur

<sup>2</sup>Dept. of HMCT, LAD College, Nagpur

<sup>3</sup>Dept. of Pharmaceutical Sciences, RTM Nagpur University, Nagpur

Corresponding Author's Email ID: rashmir.rst@gmail.com

### Abstract:

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment. Food waste is the major component of municipal solid waste. Because of the serious issue of food waste management, particularly household food waste worldwide, it may end up in food security problem. Present review aims to gather information related to household food waste management and prevention of food waste. Some tips for prevention or minimization of food waste have also been discussed here.

**Key words:** waste, food waste, food security

### Introduction:

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. It is the process of reducing waste material produced by human activity and to reduce their consequences on human health and environment. In spite of noteworthy improvement in promoting recycling and other strategies to manage waste in more economically, socially, and environmentally beneficial ways, Indians are still producing large amount of waste. On an average only 30% of total waste produced is recycled or composted.

According to the National Waste Report 2010 by the Department of Environment 35% of municipal solid waste is from food origin which is equivalent to 2.675 million tonnes of Household Food Waste. Food waste is a major problem for any organisation that produces it. Because of difficulties in processing and disposing food waste safely and efficiently, it is a major challenge before the organisation producing food waste. Food waste is one of the major components of all the waste material coming to typical landfill and generation of large amounts of methane causing significant climate change mitigation.





Thus the aim of present review is to take overview of the management of food waste and in particular, household food waste.

### **What is food waste?**

As such, there is no universally fixed definition of 'food waste'; however, the World Resources Institute is trying to coordinate defining and computing food waste with global approach. At an EU level, 'waste' is generically defined as "*any substance or object which the holder discards or intends or is required to discard*". But it is quite difficult to apply this definition to food.

The UK's Waste and Resources Action Programme (WRAP) defines it as "*all food and drink discarded throughout the entire food chain*". This can be classified into three types of food waste, such as:

**Unavoidable waste:** Waste arising from food and drink preparation not edible under normal circumstances such as apple cores, banana skin, coffee grounds, egg shells, meat bones, pineapple skin and tea bags.

**Possibly avoidable:** Food and drink that some people eat and others do not, such as bread crusts and potato skins.

**Avoidable waste:** Food and drink thrown away such as milk, lettuce, fruit juice, meat (excluding bones, skin, etc.). It includes foods or parts of foods that are considered edible by the vast majority of people. The WRAP report on household food and drink waste in the UK defines avoidable food waste as discarded edible food and drink.

### **FOOD WASTE FACTS:**

In the last few decades, the world economy as well as Indian economy has grown tremendously and the life style changed dramatically. The mode of celebration of rich people as well as middleman has also changed to organise lavish parties with large quantity of food cooked on most occasions. This is ultimately causing excess quantity of food and its disposal in the waste-bins. This is in particular takes place at Weddings, Religious feasts and various social gatherings. At catering services and in marriages, most of the food waste occurs because of the leftover food in plates which accounts to 30%, followed by hotels and wholesalers about 17%, hospitals about 15%, households about 13%. The minimum wastage is at Community





centres of about 10%. According to Lundqvist et al., (2012) if food losses & waste are reduced to 50%, it would save 1,350 km<sup>3</sup> of water at the global level.

The food waste is not only affecting the finance but also affecting the environment. Some of the effects are hazardous chemicals such as fertilizers and pesticides, increase in fuel consumption for transportation and increases in rotting food which generates more methane (one of the most harmful greenhouse gases responsible for climate change), making a significant contribution to global warming. Methane is 23 times more potent than CO<sub>2</sub> as a greenhouse gas. Approximately one third of annual food produced (1.3 billion tonnes) in the world for human consumption gets lost or wasted. The amount of food waste by consumers in rich countries is 222 million tonnes which is approximately equivalent to food production of sub-Saharan Africa (230 million tonnes). The amount of food lost or wasted every year is equivalent to more than half of the world's annual cereals crop (2.3 billion tonnes in 2009/2010).

#### **Household Food Waste:**

The Household Food Waste and Bio -Waste should be designed to promote the separation and recovery of household food waste through the production of energy, compost and digestate. There must be obligations for separate collection service for household food waste as well as for segregation of such waste and keeping it separate from other non-biodegradable waste.

Householders may alternatively:

- Compost the food waste at home, or
- Bring the food waste to authorised treatment centres, for recovery in an environmentally acceptable way, such as civic amenity sites, anaerobic digestion sites or for incineration.

Households should not allow to:

- macerate waste and dispose of it in a drain or sewer, or
- dispose of food waste in the residual waste collection( the black bin).
- The food waste holds the highest potential as compared to different types of organic wastes available, in terms of economic exploitation as





it can be efficiently converted into biogas and organic fertilizer. The advantage with food waste is that, it can be utilized as a single substrate or can be co-digested with organic wastes like abattoir wastes, cow manure, crop residues, poultry litter, sewage, etc. in biogas plant. Continuously increases in energy prices and environmental apprehension make it more imperative to harness clean energy from food wastes.

### **Prevention of Food Waste:**

It is always better to take preventive measures rather than going for the treatment or correction of problems. On the same ground, if the generation of waste from the food source is prevented, there is no question of managing food waste. So, the 'Prevention' is nothing but the measures taken prior to a material or product has become waste, which reduces

- (a) The quantity of waste, including through the reuse of products or the extension of the life span of products
- (b) The adverse impacts of the generated waste on the environment or human health; or
- (c) The content of harmful substances in materials or products<sup>2</sup>

These guidelines identify behaviour change as a key vehicle for food waste prevention. As discussed, there are various causes of food waste which are usually linked to specific national circumstances. Some of them are related with cultural customs about using leftovers or the acceptance of "doggie bags" from restaurants, or climatic impacts on the generation of green waste. Conducting Masters level research on the causes of food waste can be a good starting point for the development of a national approach to food waste prevention. Household food behaviours are habitual and intuitive, which can be attributed to actions the consumer performs unknowingly.

Centre for Development Communication (CDC), Jaipur initiated unique organization "Annakshetra" by the aim to minimize food wastage by effectively rescuing the excess food from weddings, parties, restaurants and temples. It delivers the excess food collected from donors to the needy people of local community. To minimize post- consumer level food waste,





Annakshetra uses the 3R model described as it is in the paper of Agrawal and Nag, 2013 of Annakshetra.

**Reduce:**

Awareness campaigns are run by Annakshetra to prevent food wastage. Reducing the food effectively at the first stage may result in saving the food for large part of the population as well as harmful effects on the environment can be prevented. This can be achieved by buying less quantities of any kind of processed or unprocessed food products that may end up into garbage.

**Reuse:**

Reuse is the recovery program of Annakshetra, collecting the leftover food from sources and then its distribution among the hungry and poor. Thus value is obtained from discarded food of immense importance which would otherwise have been wasted. Annakshetra also motivates people to use small portions in order to reduce post-consumer waste also called “plate waste” or “table scraps”. Consumers are encouraged to donate themselves if the leftover food is small in quantity.

**Recycle/Compost:**

If the tested food is not suitable for human consumption, it is sent for composting. Annakshetra ensures that the bio-waste does not land into landfill sites thereby preventing damage to the environment and improving agricultural output by improving quality of soil. It is ensured that the pre-consumer waste provided by donors is not ultimately wasted but is recycled. Annakshetra has a 24 hour helpline number, circulated among party places, caterers and people of Jaipur, through newspapers, posters, banners and pamphlets. An android based App has also been prepared for smart phones to reach Annakshetra. People call on this helpline to donate the high quality surplus food as soon as the party is over. The Annakshetra van reaches the venue and food is collected in reusable containers. Food is brought to Annakshetra office where it is stored in deep freezer. Next day morning after checking the quality of food, it is taken to the beneficiary site (Muhana agriculture produce market) where it is fed to workers and their families. If





the food is not fit for Human Consumption, then it is sent for Anaerobic digestion/ composting.

One way of dealing with food waste is to reduce its creation. Consumers can reduce spoilage by planning their food shopping, avoiding potentially wasteful spontaneous purchases, and storing foods properly.

Some of the tips are suggested below to lower down the wastage of food and money as well:

**Wise Shopping**—planning of meals, use of shopping lists, buying from bulk bins and avoiding impulse buys, being alert from marketing tricks that lead you to buy more food than you need, particularly for perishable items. Though these may be less expensive per item, they can be more expensive overall if much of that food is discarded.

**Buying Funny Fruit**—many fruits and vegetables are thrown out because their size, shape, or color are not “right”. Buying these perfectly good funny fruit, at the farmer’s market or elsewhere, utilizes food that might otherwise go to waste.

**Understanding When Food Goes Bad**—“Sell-by” and “use-by” dates are not federally regulated and do not indicate safety, except on certain baby foods. Rather, they are manufacturer suggestions for peak quality. Most foods can be safely consumed well after their use-by dates.

**Mine Your Fridge**—Websites such as [www.lovefoodhatewaste.com](http://www.lovefoodhatewaste.com) can help you get creative with recipes to use up anything that might go bad soon.

**Use Your Freezer**—Frozen foods remain safe indefinitely. Freeze fresh produce and leftovers if you won’t have the chance to eat them before they go bad.

**Request Smaller Portions**—Restaurants will often provide half-portions upon request at reduced prices.

**Eat Leftovers**—Ask your restaurant to pack up your extras so you can eat them later. Freeze them if you don't want to eat immediately. Only about half of Indians take leftovers home from restaurants.

**Compost**—Composting food scraps can reduce their climate impact while also recycling their nutrients and lowers down generation of methane.





**Donate**—Non-perishable and unspoiled perishable food can be donated to local food banks, soup kitchens, pantries, and shelters. Local and national programs frequently offer free pick-up and provide reusable containers to donors.

**Conclusion:**

Even though it needs immediate action, the development of a policy framework for food waste management, it is not materialized because of the complexity of defining and monitoring food waste. The complexity of defining and monitoring food waste must not continue to prevent action. Continuous increase in food prices in India can be efficiently avoided by managing wastage of food effectively. If consumers follow the tips mentioned above expenditure like labour, disposal and goods purchased can be saved. If the food waste is reused and recycled, and not thrown away into landfills deterioration of environment can also be prevented by avoiding emission of methane, a more harmful green house gas than CO<sub>2</sub>. In addition to this, large amount of fuel and energy required for refrigeration and transportation can be saved.

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