Stint for a Paradigm Shift - Food Waste to Food Security

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ABSTRACT

Food waste, the word comprises of all the waste or left -overs resulting from food at different phases, initiating from the harvest till it reaches the household levels. Food waste is defined by FAO as “the food appropriate for human intake being superfluous, whether or not after it is kept beyond its expiry date or left to spoil”. Often this is because food has spoiled, but it can be for other reasons such as oversupply due to less market demands, or changes in individual consumer shopping or eating habits. In developing countries in contemporary years, due to globalization, urbanization and increase money flow the food is being bought at large beyond the needs and being squandered easily, is a key menacing factor for food waste management systems and food security as well. This also leads to difficulties in upholding a hygienic and sanitary environment due to food waste disposal hitches, as a resultant severe health hazards and spread of many communicable diseases is uncontrollable. This article is reviewed with the intention of highlighting the various sites of food waste origin and the means and ways to overcome so as to ensure food security.


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INTRODUCTION

The food waste is a word of apprehension in emerging countries like India, as it throws to a sombre ecological and monetary dispute. Although the world’s aggregate food produce amounts to serve twice the global population, it is sympathetic that, about 20 crore people starve and 7000 starve to death every day\(^1\). Also, India ranks 97\(^{th}\) among 118 countries in the Global Hunger Index for 2016\(^2\). These integers frighteningly impetuses us to relate to the terms food produce, food waste and food security. On one hand, Globalisation and increased purchasing power in evolving nations, from the millennium year has brought insights into the varieties of foods accessible across, leading to imprudent and insalubrious choices of food followed by, throwing away of foods without guilt if cannot be consumed and on contrary, millions of children and families famish. Hence, it is imperative that the availability of food is made even for the entire universal population, to overcome hunger, poverty and stabilize food security and economy\(^3\).

ORIGIN OF FOOD WASTE

The journey of food from the place of produce to our plates is a longer mile and now a days the foods travel by air, ship and truck before it reaches us, which means there is possibility for wastage at each point of destination.

![Figure: 1 Stages of Food Waste](plasticpackagingfacts.org)

Source: plasticpackagingfacts.org
Each stage is listed below:

**a) Farm Production:**
The food waste opening at the early phase of food value chain i.e. during agricultural produce is found mostly in developing countries\(^4\). This may be due to poor irrigation facilities, improper training for farmers to alternate adoption technologies during water shortage and unfavourable climatic conditions, misuse of manures and pesticides and lack of man power to harvest on time\(^5\).

\textbf{b) Post-Harvest Handling and Storage:}

Too much of produce and perishable foods if not stored properly post-harvest lead to heavy loss even before reaching the markets\(^6\). The standards set for the size, weight, colour and appearance are also contributing factors to these wastes. Proper infrastructure, quick transportation, Protection from insects and rodents and strengthening the packaging industry will greatly prevent huge losses arising in this stage\(^7\). The percentage of food waste was projected to be 54% during produce and post-yield and proper education and training to farmers will immensely prevent this loss. The study by ICAR (2013) has appraised that in India, the loss of agricultural produce during harvest and post-harvest phases alone was to the tune of Rs. 92,651 crore\(^8\).

\textbf{c) Processing:}

The stages of processing, dissemination and consumption contributes to 46% of food cast-off. According to European Commission (2012) the stage of processing alone account for 39% of food waste which might be due to damages that occur during handling and packaging, machinery defects, food safety issues and over-production\(^9\). Food waste also result from handling procedures and excellence compliance, and food products not fulfilling eminence demands from buyers. Also, water used by the processing industry especially meats, is very high and the residues of processing have a deleterious impact on the environment too\(^10\).

\textbf{d) Distribution:}

In the PDS and supermarkets, lots of foods are wasted during stacking, distribution due to improper handling, rodents piercing the sacks and spilling\(^11\). Processed foods which reach the expiry dates before taking place the store for sale are thrown away. Milk is wasted in enormous amounts during distribution.

\textbf{e) Cooking and Consumption:}

Food waste from this phase ascend from the homes, hospitals, restaurants, parties and functions. Over production of foods, improper cooking methods, inappropriate stacking for a longer period of
time and the excess availability of foods for purchase are the causes for food waste from this category\textsuperscript{12}.

Table-1 Major Categories of Foods and Percentage of Food Waste

<table>
<thead>
<tr>
<th>Food Type</th>
<th>Major Categories of Processed Foods</th>
<th>Residues Treated as Food Waste</th>
<th>Waste from Each Category (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals And Grains: Rice, Wheat, Corn, Millets</td>
<td>Flour, bread, cookies and crackers, cake, starch, flakes, oil.</td>
<td>Straw, stem, leaves, husk, cobs, hulls and fibre, bran, germ, gluten, steep liquor.</td>
<td>30</td>
</tr>
<tr>
<td>Fruits</td>
<td>Fruits juice, preserved fruits, jams, jellies</td>
<td>Rotten fruits, stem waste, pits, seeds, peel, pulp, rind.</td>
<td>45.7</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Vegetable juices, dries veggies, vegetable oil, potato starch, sugars from beet</td>
<td>Pomace, stem waste, pits, seeds, peel.</td>
<td>46.2</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>Milk, butter, cream, yoghurt, cheese, ice cream</td>
<td>Sweet and sour whey, process waste water containing residual solids</td>
<td>17.1</td>
</tr>
<tr>
<td>Fish And Sea Foods</td>
<td>Canned fish, smoked fish, salted fish, processed fish</td>
<td>Scales, fins, shells, bones, gut, remains, fish oil</td>
<td>34.7</td>
</tr>
<tr>
<td>Egg, Poultry and Meat</td>
<td>Processed red meat(beef, pork)and products, processed poultry and products</td>
<td>Egg shell, Skin, Intestine waste, water used for processing</td>
<td>21.5</td>
</tr>
<tr>
<td>Beverages</td>
<td>Cocoa, coffee, tea, fruit based alcohols, grain-based alcohols</td>
<td>Shells from cocoa and coffee beans, cocoa, molasses, steep liquors</td>
<td>-</td>
</tr>
<tr>
<td>Oil Seeds</td>
<td>Oils, hydrogenated fats, polyunsaturated fatty acids</td>
<td>Press solids and cakes, oil water emulsion, rancid oils, shells of oil seeds</td>
<td>22.1</td>
</tr>
<tr>
<td>Sugars</td>
<td>Sugars, purified sugars, confectionary, bakery products</td>
<td>Dilute sugar solutions, molasses</td>
<td>-</td>
</tr>
</tbody>
</table>

MEASURES TO REGULATE FOOD WASTE

1. Government Initiatives and Policies:
   - Mega Food Parks: Links agricultural production to the market by bringing together farmers, processors and retailers to ensure maximizing value addition, minimizing wastage, increasing
farmers’ income and creating employment opportunities, particularly in the rural sector. The Scheme envisages the creation of support organization structure in a well-defined agricultural and horticultural zone for setting up of modern food processing units.

- **Cold Chain, Value Addition & Preservation Infra:** It covers pre-cooling facilities at production sites, reefer vans, mobile cooling units as well as value addition centers which include many infrastructural facilities.

- **Creation of Food Processing & Preservation Capacities:** To increase the level of processing, value addition leading to reduction of food wastage.

- **Agro Processing Cluster:** Effective backward and forward linkages are created by linking groups of farmers to the processors and markets through well-equipped supply chain consisting of modern infrastructure for food processing closer to production areas in order to reduce food waste.

- **Food Tech India (FTI):** is a public-private initiative combining the strengths of Dutch agro-food companies, knowledge institutes, governmental agencies and their Indian counterparts to reduce food waste and food wastage in India through the establishment of an improved supply and cold chain.

- **Indian Food Sharing Alliance:** IFSA has been formed by the Food Safety and Standards Authority of India (FSSAI) to help solve India’s food waste and hunger crisis by working with various partner organizations, Food Recovery Agencies and NGO’s.

2. **Grass Root Education and Training:**

Joining farmers together in cooperatives or professional associations can help to greatly reduce food losses by increasing their understanding of the market, enabling more efficient planning, enabling economies of scale and improving their ability to market what they produce. For instance, improved rice-storage bags provided to farmers in Philippines have helped cut losses of rice by 15 percent. In West Africa, use of solar dryers to extend the shelf life of fruit and tubers is showing promise in reducing post-harvest losses. Often, food losses can be significantly reduced simply through training farmers in best practices.

3. **Individual Liabilities:**

- Inculcate wise shopping practices.
- Follow proper storage.
- Improve consumption pattern.
CONCLUSION

FAO reports that one third of the foodstuff produced in the world for human intake each year, which is circa 1.3 billion tonnes gets futile. It is estimated that saving one-fourth of the food currently lost or wasted globally would be enough to feed 870 million hungry people in the world, of which the highest number (about 194.6 million) are in India. Maximum food loss happens during transit from farm to fork which is preventable. These losses not only impact producers with reduced income and consumers with increased costs, but also challenge overall food security. It is high time to sense this gigantic volume of waste and act wisely to benefit humanity and the environment as well.
REFERENCES
