



## A STUDY ON FOOD WASTES IN HOTEL INDUSTRIES AND THEIR EFFECTS

Jagbir Singh Dalal\*      Sunil Kumar Panwar\*\*

\*Department of Hospitality & Hotel Administration, B.P.S. Women University, Haryana.

\*\*Bhikaji Cama Subharti Institute of Hotel Management, Swami Vivekanand Subharti University, Meerut.

### Abstract

Every year, 475 pounds of food waste is produced by the average person adding up to more than 70 million tons in our landfills. Not only does the waste attract vermin, it emits odors and liquids that are toxic to the environment. As a result, the methane gas generated from the waste is 20 to 25 times more potent than carbon dioxide. Food waste has become a big issue in all types of businesses. This is especially true in the hospitality industry. Haute cuisine, all you can eat buffets, and in room dining are all an integral part of the hospitality experience. But what happens to all the leftovers once guests are done eating? Most of it will be hauled off to landfills at a great cost to the establishment and an even greater cost to the environment. There are many ways that food waste affects the environment. Understanding the effects is the first step in helping to make a difference. Firstly, there is production.

**Key Words:** Waste Management, Hotel Industry, Food Waste, Waste Reduction.

### Introduction

Indians waste as much food as the whole of United Kingdom consumes – a statistic that may not so much indicative of our love of surfeit, as it is of our population. Still, food wastage is an alarming issue in India. Our street and garbage bins, landfills have sufficient proof to prove it. Weddings, canteens, hotels, social and family functions, households spew out so much food. According to the United Nations Development Programme, up to 40% of the food produced in India is wasted. About 21 million tonnes of wheat are wasted in India and 50% of all food across the world meets the same fate and never reaches the needy. In fact, according to the agriculture ministry, Rs. 50,000 crore worth of food produced is wasted every year in the country. Food wastage cripples a country's economy to an extent that most of us are unaware. If food is wasted, there is so much waste of water used in agriculture, manpower and electricity lost in food processing industries and even contributes to deforestation. Taking all of into consideration, the actual worth of money per year in India from food wastage is estimated at a whopping Rs. 58,000 crore. Some measures that the government needs to take include containing wastage in transportation, improve storage facilities (the cold storage chain is 50% less than required and that too needs to be brought up to world standards), food processing also needs to be sped up so food is saved and wasted less to feed more. While you may not be able to reduce food lost during production, you can certainly reduce food at your personal level of food waste. Every step taken in the right direction counts.

Whereas, in world's GDP, it is 9.1%, and rising with a rate of 4.3% per annum (World Travel and Tourism Council (WTTC), 2012). Its significance also increases in the context that this industry is the world's largest employer, generating 254,941,000 jobs which mean that nearly one out of every 12 jobs is from this sector (WTTC, 2012). In India, every million invested in tourism creates 47.5 jobs directly and 85-90 jobs indirectly which higher than employment opportunities generated by agriculture (44.6) and manufacturing (12.6) sector (Mukherjee, 2012).

A research team at Cornell's School of Hotel Administration initiated a study in the spring of 1975 to examine the wastes of commercial kitchens considering the fact that restaurants are major waste producers, and little or no data on the quantity or character of their wastes were previously available. The results of the statistical analysis indicated that the amount of fluid wastes generated has both a fixed and a variable component; and the per-meal waste dropped as the number of meals served increased. It further established that the amount of water used per meal also dropped as the number of meals rose, perhaps as a result of more efficient loading of the dishwashing machine and the spreading of fixed water usages over a larger number of meals (Nusbaum and White, 1977).

The production of food is very costly to the environment just by itself. Large amounts of land are cleared for plants and crops to grow and be able to feed a country. The land, once part of the ecosystem, is now replaced with acres of production facilities. The damage doesn't stop there, as fertilizers and pesticides are used to assist in the growing process. Though there may not be any sort of immediate impact on the land, a accumulation of farming years will lead to the long term poisoning and harm of the soil and water systems.

### Waste Reduction

Tourism industry serves an estimated 40 million visitors annually. More than 50 percent of these visitors are hotel guests during some portion their stay. The waste generated by these guests constitutes a large portion of the state's commercial waste stream. A hotel waste audit showed that the majority of waste in a hotel is not produced in guest rooms, but in the

Food and Beverage Department. If a hotel's waste is not reduced or recycled, it contributes to the state's overall environmental problems. Reducing materials at their source, coupled with recovery, reuse and recycling prevents pollution and reduces or eliminates treatment and disposal costs. Recycling should be incorporated into daily operations along with staff training. Each hotel/motel recycling program must be specifically designed to accommodate the hotel's procedures of operation, hotel activities and structural design.

Climate change alters the conditions in which crops are grown, as a result of factors such as changing precipitation patterns and increased fresh water scarcity, the degradation or loss of agricultural land and our ability to grow crops. This can lead to major regional challenges, as people are displaced if the crops on which they depend can no longer be grown. In addition, throughout the food chain, food waste generates greenhouse gas emissions as it decomposes in landfill, or through the wasted resources used in its production and journey from farm to fork. Preventing food waste can therefore reduce the need for resource consumption that leads to climate change, and help improve future food security and availability, reducing displacement effects and leading to a more stable supply of food.

The waste management industry in the United Kingdom is currently regulated and guided by the Environmental Protection Act (EPA) 1990, which provides more control over waste carriers and producers (Read, Phillips, & Robinson, 1998). All producers of waste must comply with Section 34 of the Act which is known as "Duty of Care". This requires all commercial and industrial businesses to use an authorized waste carrier and to store, present and dispose of their waste properly (Webster, 2000).

It is essential to educate and train staff about waste minimization practices, along with providing incentives to enhance their commitment to the programme (Cummings, 1997; Trung & Kumar, 2005). Cummings (1997) indicated that customers can play an important role in a hotel's waste recycling programme by not contaminating waste with food. A range of methods can be used to encourage customers to segregate their recyclable materials, i.e. providing another bin in the room or near lifts for recyclable materials. Hayward (1994) indicated that customers' attitudes towards the environmental issues had changed positively.

#### Statistics Wastes

- 40% of all landfill content comes from food waste
- Currently only 3% of food waste is recycled
- Food waste generates methane gas which is 20-25% more potent than CO<sub>2</sub>
- About 20% of Canada's methane emissions (a greenhouse gas that traps more heat in the atmosphere than carbon dioxide) come from landfills
- Canadians waste approximately 40% of perfectly edible food, which amounts to about \$27 billion worth a year
- The Hospitality industry accounts for 8% of all food waste in Canada (51% from Households, Everything starts at home! If you are careful with your own food waste, you will be more careful at work as well!)
- Currently, less than 3% of the more than 30 million tons of organic waste produced annually gets recycled. For commercial food processors who deal with large quantities of food waste, the problem is multiplied.



Fig. 1.0 Food Wastes in Hotel

When staying at hotels, the average guest will produce 1 kilogram of waste per night of stay. Multiply that by the number of hotels and guests around the world and the total amount of waste is overwhelming. One should also take into account the necessary space this all needs for storing and sorting. Not an easy task to deal with, considering how some hotels are situated in a busy city centre, where space is limited. During the design and construction phase of hotels, the majority of space is usually allocated to public and guest areas including the lobby, restaurants, banquet halls, a health club and the gardens. As a result, the small remaining areas are left for back of house staff to dispose and sort waste. Adding to this, is the consideration of health and safety and the noise created when compacting and collecting.

### Food Consumption and Avoidable Food Waste

According to Danish and Finnish statistics it might be concluded that one third of all food is served within the hospitality sector. Available literature gives different results on food waste and avoidable food waste. There is thus a need for both better methodology and definitions in order to improve statistics on food waste and avoidable food waste. Based on different methods the amounts of food waste and avoidable food waste are calculated in order to illustrate the situation of avoidable food waste within the hospitality sector in general and for different segments. The analyses conclude with a best estimate for total avoidable food waste in the four countries of 456,000 tons, e.g. about 18kg/ inhabitant. The differences between the reports underline a need for better statistics, including better definitions and reporting systems.

## Waste Generated at Hotel A Wedding Function

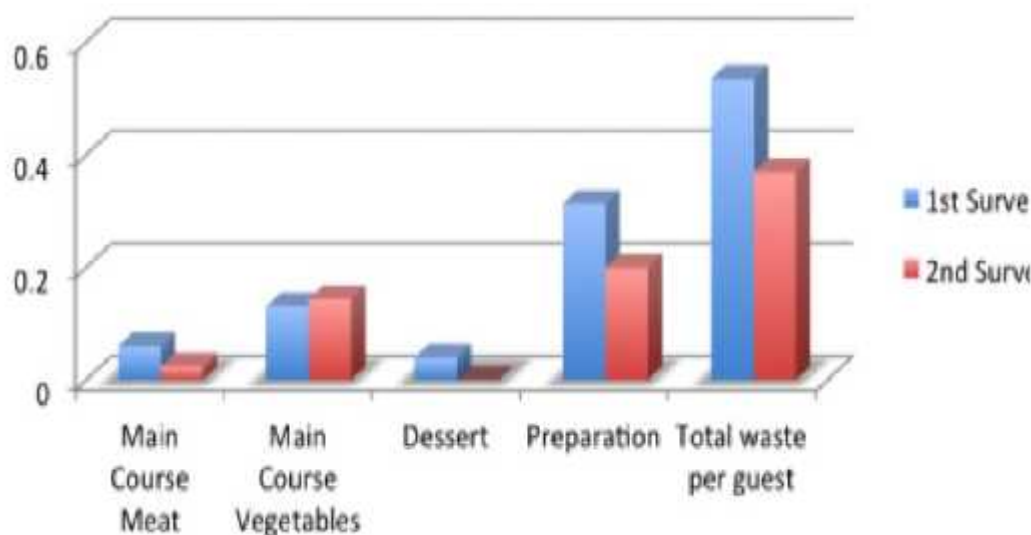


Fig. 1.1 Food Wastes in Function

### Some Tips for Reduce Food Waste and Save you Money

1. **Plan your Menu Carefully:** Take the time to assess what meals have been popular (and not so) and at what times. It may be difficult to understand your supply and demand if you are a new establishment but gaining a good understanding your customer base is invaluable.
2. **Make the most of Seasonal Produce:** this keeps the menu interesting, is a more economical way of shopping and means if you do run low on something it's easy to acquire more.
3. **Avoid Unnecessary Food Spoilage:** Ensure you store your products properly and safely (according to food safety guidelines) and make sure your fridge/s and freezer/s are running at optimum temperatures.
4. **Grow your Own Herbs:** not only do you have what you need on tap but it's also a good environmental selling point for the customers.
5. **Inspect all Food Orders Upon Arrival Thoroughly:** If something doesn't look good or isn't right, send it back straight away.



6. **Encourage Customers to Take Home Leftovers:** Have (recyclable) left over containers available so customers can easily take home and enjoy later on.
7. **Local Shopping:** If you have a good local produce supplier nearby use them! This should help you avoid over buying products as if you do get low on anything you can easily purchase more. It's also a great way of supporting your local community.
8. **Plate Size:** If you notice customers are consistently not getting through dishes consider making the plate size slightly smaller.
9. **Change Menu to Minimize Leftover Food:** If you begin to anticipate that you won't sell a certain item before it spoils, adapt your menu to include a temporary special.

### **Hospitality and Catering Food Waste Collected in Abundance by Eco Food Recycling**

Hospitality and catering food waste accounts for millions of tons per year and Eco Food Recycling the leading independent food waste collection and recycling company in the south are collecting from some of the biggest names in the UK. The hospitality sector includes hotels, pubs and restaurants when you are talking about food waste and Eco Food Recycling are collecting and recycling food waste from famous names such as Whitbread, Premier Inn, Beefeater, Hotel du Vin, Malmaison and Ramada to name but a few. Catering food waste accounts for a high percentage of commercial food waste in the UK and includes schools, Colleges and Universities as well as company canteens. Eco Food Recycling are currently collecting from three B & Q sites at their headquarters in Chandlers Ford along with Universities at Southampton and Winchester as well as local schools in Bournemouth. Eco Food Recycling use a local food waste disposal site in Bournemouth for all of their hospitality and catering food waste and a lot of the food waste collected is from a local shopping centre and a nearby premium leisure park. Theme parks such as Paultons Park at Ower near Southampton have their food waste collected by Eco Food Recycling and have been reaping the rewards in their increased recycling figures. Another major coup for the Ringwood based food waste collection and recycling company is the agreement to collect all food waste from 18 Waitrose supermarkets in the south of England. As well as these large corporate names the companies are also collecting food waste from businesses of all sizes as they too look to divert food waste from landfill.

The hospitality industry in many parts of the world is expected to see significant rates of growth in the next few years. For example, Revenue Per Available Room is expected to grow by 6% in 2014 in the United States (**Berman, 2014**) and by up to 5% in some European cities during 2014 and 2015 (**Milburn and Hall, 2014**)

### **Major Hotel Chain Expand Food Waste Collections with Eco Food Recycling**

After a successful two month trial at Hotel du Vin, Winchester where 5.5 tons of food waste was produced in the 8 week trial period the green light was given to introduce the food waste collection and recycling service to sites in Poole and Reading. Both the Hotel du Vin in Poole and Malmaison in Reading will commence food waste collections from Eco Food Recycling in early June. Eco Food Recycling offer a food waste collection and recycling service to Hotels of all sizes in Dorset, Hampshire, Wiltshire, Berkshire, Surrey and Sussex whereby all food waste collected is 100 % recycled.

### **Food Wastes and Effect on the Environment**

More than 50 percent of the waste occurs during "upstream" or the production, yield handling and storage phase and the remaining happens during processing, distribution and consumption stages or the "downstream" phase. The FAO report was also able to discern a clear pattern in food waste at the global level. While middle and higher income regions showed greater food loss and waste during the downstream phase or at the consumption level, developing countries were more likely to lose or waste food at the upstream phase due to lack of proper harvest techniques and infrastructure. It goes without saying that the later food is wasted along the chain, the greater is its environmental impact, because then we also have to take into consideration the energy and natural resources expended in processing, transporting, storing and cooking it. For thousands of people in developing countries struggling against poverty, informal waste recovery represents a means of earning a living (**Razeto and Hemelryck, 1991; Fernandez 1997a**). Informal recycling networks provide employment opportunities, reduce collection and disposal costs, conserve natural resources, and provide raw materials to industry at comparatively low cost (**Jindal et al., 1998**).

### **References**

1. Berman, s.d., 2014. Hospitality directions us: our updated lodging outlook.
2. Cummings, I.e. (1997). Waste minimisation supporting urban tourism sustainability: a mega-resort case study. *Journal of sustainable tourism*, 5(2),93-108.
3. Fernandez, a. L. (1997a). Introduction. In fernandez, a. L. (ed.), k. Oya (co-ed.) And d.
4. Hayward, p. (1994). Disney does the environment. *Lodging*, 19(7), 46-58.



5. Jindal, r., h. Harada and s. Shikura. (1998). Solid waste management in some asian countries. Environmental systems review no. 42/43. Bangkok, thailand: environmental systems information center (ensic), asian institute of technology.
6. Mukherjee, d. (2012). Rural tourism - path to economic and regional development in india, kurukshetra. Vol 60(7): pp 3-6.
7. Razeto, j. And l. Hemelryck. (1991). Community participation in waste recycling and management. African environment 29-30(viii, 1-2):147-155.
8. Read, a.d., phillips, p., & robinson, g. (1998). Landfill as a future waste management option in england: the view of landfill operators. The geographical journal, 164(1),55-66.
9. Trung, d.n., & kum?r, s. (2005). Resource use and waste management in vietnam hotel industry. Journal of cleaner production, 13(2), 109-116.
10. Webster, k. (2000). Environmental management in the hospitality industry: a guide for students and managers. London: cassell.
11. World travel and tourism council (2012) accessed at [www.wttc.org](http://www.wttc.org).