



## Food Waste Management and Donations System

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**Abstract**—*Abstract—The paper represents the website to reduce the food wastage by providing that too those who are in need. In today's world people are wasting more food than consuming, which is a huge problem. India ranks 2nd in food wasting, about 68.8 million tons of food is wasted per year. This proposal is to overcome the food wastage problem. It will work as request and response from Restaurants and NGOs. The quantity and lifetime of the food should be mentioned by the restaurants. NGOs should collect the leftovers from Restaurants before the lifetime of food and distribute among those in need. And the restaurants can post the food donated details.*

**Keywords**—*NGO: Non-Government Official.*

## I. INTRODUCTION

In the country where the commercial status has reached in a stage that tons of available edible food is heaved away as waste in every stage of the market. Food wastage is estimated 25% of the available amount of succulent food. The food is important energy demanding product group and resource.

Every restaurant has perfectly good food that they cannot sell at the end of their day. Large amount of these food goes wasted and is thrown away in the dumping zone. How can one efficiently use this food to kill someone's hunger? What if there is a platform which connects restaurants to institutes such as NGO's. With this platform not only, NGO's can serve more hungry people additionally restaurants will also have a meaningful channel to distribute or dispose of the surplus food. It's a win-win situation where business can contribute to a sustainable environment in a meaningful way at the same time charities help fight food poverty. For this to happen both NGO's and restaurants will have to register with the platform and exchange information regarding how much food is remaining and NGO's can collect those food from the nearest restaurants.

NGOs work as food collectors, collect food and redistribute food from donor to community centers (needy people), considering the types and sources of food two main outputs:

1) The approach makes connection of Donors and NGO that will help them to start a program for the contraction of food waste and the improvement of unsold food.

2) Approach enables the matching of Donor and NGO of leftover food stuff through internet.

## 1. FOOD WASTE IN INDIA

In a CSR Journal report, it stated that "Indians waste as much food as the whole of United Kingdom consumes." With over 1.3 billion people in a nation

like India, millions are still sleeping hungry. In the Global Hungry Index-2017, India ranks 100 among the 119 countries. Food wastage not only represent hunger, climate change or pollution, but also various glitches in the nation's economy, like inflation. Our traditions and culture play one of the major role in these situations where the policies of the government aren't responsible for such wastages. Here in India, the bigger the wedding, the bigger is the food wastage is expected to be. Today the number of individuals who are 119 hungry in Indian are now more than 65 million, which is statistically higher than the population of few countries in the world. Wastage of food can cripple a nation's economy to such an extent that most of us are uninformed. Despite India's largest livelihood being agriculture, there is a struggle to feed its ever-growing population. Regardless of this fact, we are able to grow enough produce to feed each individual but this adequate production of food doesn't guarantee India's food security. As India is a developing nation 40% of our produce is lost during post-harvesting and processing level. The farmers in India do not have money to be technologically ahead of their counterpart in America, so they don't have the facility to store their produce in cold storage, therefore, they end up losing some part of their harvest to decay. Another aspect on which India's farmer lose out is transportation. For example, a farmer in the Vidharbha region of Maharashtra harvests his crops tomorrow, then he stores this produce in an open storage area, now before he is able to sell his produce to the wholesalers which are within 5-7 days of harvest he loses the produce due to decay or infestation of rats. From the field to the market it is a process of at least two weeks thus reducing the produce further. India suffers losses of up to £4.4 billion in fruit and vegetables each year due to the absence of effective technologies to keep produce cool. A United Nations report states that India is ahead of China when it comes to wasting food items and both of these nations

are the worst culprit of food wastage. An estimate of 230 cubic km of fresh water goes into producing food which is eventually wasted, this water is enough to quench the thirst of 10 crore people each year.

a) The State of Hunger in India

According to "The State of Food Security and Nutrition in the World, 2017" report, close to 190.7 million Indians are severely undernourished, it refers to 14.5% of the population. Further, in the report, it stated that 38.4% of the children are malnourished and 51.4% of the women in their reproductive age (15-49) are anaemic. As mentioned above on the Global Hunger Index India ranks 100. systematic observations. out of 119 countries on indicators like - prevalence of stunting in children below 5 years, the mortality rate of children under 5 and proportion of undernourished individuals.

b) Food Waste & Environment

When you thought that wasting food had no other effect, you were wrong. Food wastage aside from impacting world hunger it also affects the environment. The already scarce natural resources have additional pressure every time food is lost or wasted. Greater the wastage of food along the chain the greater is the impact on the environment because we have to consider the natural resources and the energy that goes waste into producing processing, transporting and storing the food items

Once this food waste lands into the landfills it releases a powerful greenhouse gas-methane. This deadly gas with Carbon Dioxide and chlorofluorocarbons heat up the earth's atmosphere, in the end, causing global warming,

Prajal Pradhan, co-author of a research "Food Surplus and its climate burden", explained. "Agriculture is a major driver of climate change. accounting for more than 20 percent of overall global greenhouse gas emissions in 2010. Avoiding food loss and waste would, therefore, avoid unnecessary greenhouse gas emissions and help mitigate climate change."

c) Generators of Food Wastage

bakery items. Whereas non-perishable food - pasta, canned goods, highly processed shelf-stable products are generally wasted less as they are not spoiled easily. Perishable food often gets discarded because they quickly lose their shelf life and are inexpensive. Fruits and vegetables are least expensive and fastest spoiling food. Seafood and meat are two least wasted and most expensive food type.

## 2. WASTE AVOIDANCE

**REDUCE** - 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.

**FEED LIVESTOCK**- Food which is unfit for human consumption should be feed to livestock in order to avoid wastage. Legally permissible bakery, fruit, vegetables and dairy products should be directed to farm animals.

**PEOPLE IN NEED**- Surplus food should be directed to organizations and charities which can redistribute the food. This should be done in long run to avoid alarming wastage of food.

## Waste Management:

### COMPOST AND 100% RENEWABLE ENERGY

Unavoidable food waste should be sent for composting for fertilizer production. This unavoidable food is 100% renewable fuel for electricity, heat or transport.

**DISPOSAL** - Unavoidable food should not be buried inside the land where environment- friendly alternatives are available. This practice can lead to land pollution which in turn would harm our natural resources adversely.

#### A. SYSTEM ANALYSIS: EXIXSTING SYSTEM

Most sustenance banks sort and reconstruct both gave and bought food utilizing a focal warehousing framework. Generally, sustenance banks accomplice with the food business to reconstruct durable leftover food itemization with the end goal of giving beneficent administration offices, for example, food storerooms with fundamental fixings and sustenance choices. Sustenance banks likewise rely on financial gifts to buy more food with an end goal to stuff the mess between sustenance gifts and interest. The significant sustenance bank procures food through an option technique, too. While Community Food Share aides diminish the measure of sustenance going to waste, palatable food still gets left behind or lost experiencing significant change. Group Food Share can and can't take restrain the food bank's capacity to gather everything produced by its contributors.

#### B. PROPOSED SYSTEM

Source decrease alludes to diminishing the measure of food waste created before it happens while sustenance recuperation shows the preoccupation of produced sustenance squander far from landfills. This proposes the most favored strategy for redirection as sustaining hungry individuals, or as it were, sustenance recuperation through gifts. The restaurants, marriages, parties etc. when have the remained or leftover food can donate it to the needy, poor people to satisfy their hunger. This approach connects these NGO and Donor with a specific end goal to provide the sustenance to the poor individuals. Contributors utilizing this approach have contact with NGO of adjacent and giving about all data of sustenance waste like quantity of food, type of food, serving time (in which food ought to be taken by NGOs to convey to penniless people). The Donor can track the person sent through NGO through the given details until he/she picks up the food.

The approach unite these two, in such a path, to the point that these NGOs can persuade the "sustenance to be squandered" without bother, and the inns/eateries/party-lobbies discover these food seekers with no additional exertion then it serves a more prominent reason and that will be an enormous administration to mankind. The restaurants can post about the donated details feed post. All the registered NGO's Can see the Donation Pickup request and accept if nearby available.

## II. LITERATURE SURVEY

A. *Vikram, Anirudh, Bhuvaneshwaran, Praveenkumar and Suganth kumar, "A Survey on Food Waste Management System", 2021.*

Food loss or food waste is the food that is not eaten by the consumer. By properly analyze and manage the food waste makes our world to economically and environmentally healthy

and make the resources available for the future generations. Everyday many students in the college wasting lots of foods. Its an initiative to develop a web application for college used to keep track and analyze the food waste and to take a better decision by knowing what went wrong and to take the essential steps to avoid the food wastage.(1)

B. *Bagherzadeh M, Inamura M, Jeong H, "Food waste along the food chain", 2014.*

Food waste and loss are sometimes classified into two broad categories – avoidable and unavoidable. For industry, avoidable food waste includes damaged stocks and products that have not been used. Food waste occurs for a number of reasons, including over purchasing, poor preparation, and inadequate storage, and excessive serving sizes. While avoidable food waste could be prevented (for example through better planning), unavoidable food waste consists of unsellable or inedible food. Available technology and economic efficiency also contribute to determine the distinction between avoidable and unavoidable food waste.(2)

C. *Davis C, "Food recovery through donations as a response to food waste", 2014.*

In this work, A case study of two grocery stores participating in food recovery program in Boulder. University of Colorado, Boulder, CU Scholar. In other words, food waste represents any food that gets produced for human consumption but goes uneaten. With nearly half of all food available for consumption in the INDIA getting thrown out each year, the issue poses serious environmental, social, and financial implications. From farming to disposal, food waste emerges due to inefficient practices along the food life cycle that misuse not only the nutritional and monetary values of the final product but also the various inputs of each step, such as energy and freshwater, while the main disposal practice of land filling contributes to environmental degradation.(3)

D. *Nolan D, "Research for possible establishment of a food bank in Donegal", 2014.*

Food wastage is one of the major issues that need to draw the attention of society as this issue requires proper planning and steps to manage its consequences. Waste food can be managed based upon its quality. If the food is safe enough to consume then it can be donated to the NGOs which would further be donated to various hunger zones.(4)

### III. METHODOLOGY

This system reduces restaurant, functions food wastage by giving leftover food to NGOs. NGOs will raise a request, in case of any leftover food restaurants have. This request is sent to the restaurant manager of that particular restaurant. The NGO Manager then approves the request and assigns it to one of the NGO employees for takeaway and responses to the restaurant. The restaurant manager can track the person sent through NGO by given information through NGO until he picks up the food. The leftover food at the restaurant can be given to NGOs at the end of the day.

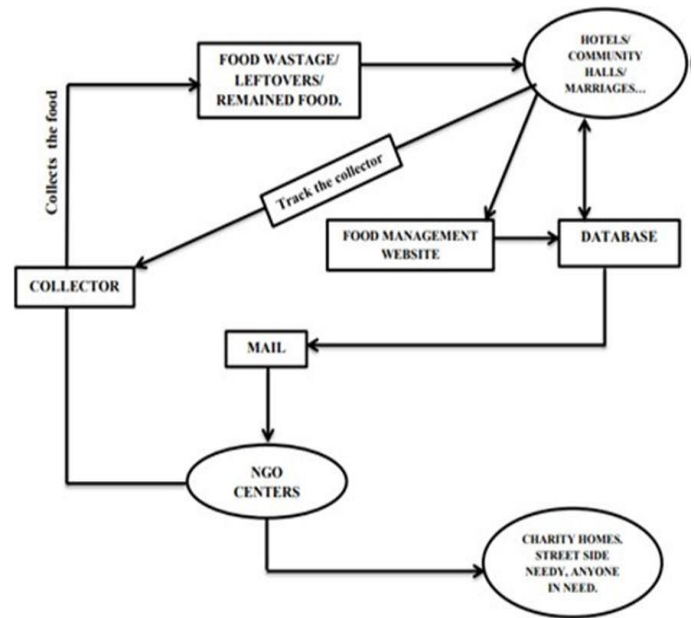


Figure.3.1: Data Flow Diagram

### A. DATA ANALYSIS

#### Research Aim and Structure

Food waste is the most challenging issue humankind is facing in today's world. Nowadays food systems are extremely inefficient. With largest agricultural sector in the world and population more than 1.3 billion people, India's farming output has a significant impact on global food security.

India produces enough food to feed entire country like Egypt. We are wasting 67 million tons of food every year, according to a government survey. 67 million is more than the national output of a country like Britain. Wastage made every year is more than enough to feed an entire Indian state for a year.

#### Aim

This paper seeks towards the overview of food waste in consideration of its major sources with a vision of identifying the significant reasons of the food wastage.

#### Structure

With this objective structure of research mounted in this paper is as follows: Firstly, an overview of global food wastage in India is depicted; Secondly, major area contributing to food wastage are identified; Thirdly dominant reasons accountable for food wastage are set out in the paper; Fourthly statistical data portraying the volume of food wasted and adverse effects of the food waste on our country; Finally, the food waste.

### IV. SYSTEM REQUIREMENTS

#### A. Hardware Requirements

- 1) System: Pentium IV 2.4 GHz.
- 2) Hard Disk: 100 GB.
- 3) Monitor: 15 VGA Color.
- 4) RAM: 4 GB.

- 1) Operating system : Windows 10/11
- 2) Coding Language: Html, JavaScript, CSS
- 3) Server: XAMPP
- 4) Database: Firebase Database

## V. CONCLUSION

The sustenance approach serves to stay away from crevice between the Ngo and Donor. The approach serves to give the sustenance waste to the penniless individuals who are battling for food. The approach unite these two, in such a route, to the point that these NGOs can persuade the "food to be squandered" without bother, and the inns/eateries/party-lobbies discover these sustenance seekers with no additional exertion then it will serve a more noteworthy cause and will be an enormous administration to mankind. This approach serves to upgrade open picture of inns, eateries who are giving sustenance and it serves to spare cash.

It decrease the over buying of food and diminish ecological effects. On the distance it helps penniless individuals to get sustenance with a specific end goal to survive life. Food waste is a result of throwing away good eatable food before it even reaches the mouths of humans. Food storage is causing the untimely death of approximately 3.1 million children under the age of five across the world. Wastage of food is a real issue faced by the society concurrently with other environment-related issues.

We often see, hear or read of situations which bear the news of starvation-related deaths in India and worldwide while our total output seems to contradict the statement above. Food scarcity in India or worldwide is a man-made problem as nature is pushing its level best to complete the ever-growing demand of humans. It's high time that we start working towards bridging this gap. We should start thinking every time we buy food in excess or eat it on how can we make the most of it without wasting a single drop of water or a single piece of food. It is never too late to rectify a mistake; a moment of opportunity is a year of opportunities. By working together in eradicating world hunger, we can make a humungous difference saving tons of food, millions of money and billions of lives.

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