What to know about FOOD WASTE

HOW TO REDUCE YOUR FOOD WASTE IN A EASY AND ENVIRONMENTALLY WAY

An Introduction
# TABLE OF CONTENTS

1 - Title 
2 - Table of contents 
3 - Forward 
4&5 - The Three Pillars of Food Waste 
   - Food Scarcity and distribution 
   - Climate Change 
   - Economic loss 
6 - The Food Waste Process 
7 - Food Waste (Awareness) 
   - Food Waste Index 
8 - Food Waste (measurement) 
   - Hierarchy of Food Waste 
9 - Methods of management and Measurement 
10 - Types of Food Waste in Business 
   - Food Waste Tracker 
   - Plate Waste Tracker 
11 - On Site Food Waste Management 
12 - Compost 
   - Food Waste master 
13 - Other Methods of Food Waste Management 
   - Anaerobic Digestion 
   - Aerobic Digestion 
   - Biogas 
14 - Why start now 
15 - Conclusion - Play your part!
Foreword

Food brings us together. It is our stable for survival, and a key to creating richness in cultures. The culinary industry today is massive, playing a main figure in a growing incentive to travel, explore new places, and understand bases of other cultures while trying their food.

At current day the production of food is currently one of the most prosperous in the world. And growing food industries continue to further benefit our economies. Yet, we are dealing with food in an abundance and a lack of proportionate distribution. We produce more food than ever previously noted, but still one third of all food prepared for humans is wasted from the journey from farm to the fork. This third of food wasted is estimated to be around 13 billion tonnes. (FAO).

With the wealth of availability and resources so many have today, why is this waste problem still an issue? With a growing population, and revolutions in technology innovation for sustainable cities, Food waste tech dedicates itself to tackle the managing the abundance of food that is wasted.

In this short e-book we will elaborate the main issues revolving around food waste, and the processes that can reduce it. We hope to better examine the source of wastes, reasons, introduce management techniques for actors to participate to lower their amount of waste.
The Global Problem With Food Waste

Food waste contributes to three pillars of the sustainable development methods, which are economic, social and environmental.

1. Malnutrition and distribution of resources
2. Climate change contribution
3. Economic opportunity lost

Malnutrition and distribution of resources
Contrary to popular belief, the growing population is not a direct cause of hunger itself. In terms of food prepared, there is more than enough resources to feed. Issues striking hunger are around micromanagement of distribution on resources.

Even so, there are already expectations to feed a growing population, which is expected to boom in the next twenty years. Two thirds of those populations are expected to reside in cities. Global food demand is expected to double from between 2000-2050.

Reducing food waste also provides the opportunity for more food security in other countries, providing more food available to the 800 million people who currently suffer from hunger. Proper food security and cooperations amongst businesses and large scale policy and infrastructure can carrying a positive social effect in consumer behavior.

Climate Change Contribution
If food waste was a country, it would be the third largest emitter of carbon emissions in the world- generation 3.3 billion tons of carbon dioxide. Climate effects that the food waste contributes too include

Deforestation, water loss, methane emissions, soil nutrients, land loss, biodiversity, human health, and pesticide contamination.

In the next ten years, officials will need to create policies to align with the 1.5C degree report, which will ask the world to reduce its carbon emissions to zero to avoid devastating effects of global warming.
The Global problem with Food Waste (continued)

Economic opportunity lost
Food wasted also wastes all the resources to produce the food itself in the first place, including the labor loss and effort that takes place in the production process. A better managed food system would also ensure that labor attempts are not wasted. Food is valuable, and when wasted, the amounts add up quickly.

Good News
Food waste is one of our largest environmental problems yet also one of the most easily avoidable problems we have. The good news is a lot of the issues revolving food waste are easily solvable in a affordable way. When these practices are implemented into businesses, they affect waste amounts radically without a major or lifestyle shift of those working in the food industry. Food losses can be cut of around $680 billion in industrialized countries. (FAO)

So what are the main mistakes being made within Food Waste? And how easily can we prevent them?
The Food Waste Process

The food waste hierarchy displays and explains the process and main reasoning for food waste. Before the food actually reaches our plates, there is a whole process involved including growing, harvesting, handling, transporting, and prepping one if it reaches the consumer market. The food waste hierarchy demonstrates the proper ways and options to avoid wasting food, beginning with Prevention, prepare for re-use, recycle, recovery, and disposal.

Food waste occurs in ALL parts of the food processes until it reaches someone's mouth. Farmers, food suppliers, restaurants, chefs, managers, and even consumers are key players in this process. They are also a crucial part of the solution.

As the reader try to identify your position in this process as we better address ways to combat excess waste. Food Waste Tech has identified a three course action plan to identify and track the food waste for consumers and businesses alike, to better understand how to measure and reduce their carbon footprint easily, while generating savings for the company. The process is separated into three sectors, being

Awareness, Measurement, and Recycle.

Growing Trends in Food Waste

As we already mentioned, multiple actors are responsible for food waste in the farm to fork process. Over recent years new policies and laws prohibit improper disposing of edible food, such as in France and parts of Italy. While this beginning, much still needs to be done with the remaining majority of countries. The public also began to pay attention to the severity food being fed to us, for health, and environmental reasons.

Trends revolving around "organic" food or even special diets eating less meat have quickly risen to popularity in the last decade. People value quality other than quantity and availability, and are willing to pay more for it as well. Health benefits, and environmental factors within consumer power has shown their priority, especially among younger generations. Awareness returns to the attention on our food waste epidemic, suggesting that if people are rejecting older trends, such unsustainable food and practice, they can play into growing awareness for food waste problems, and become wiser consumers, and adapt new practices.
Awareness

Long term beneficial change comes from knowledge and feasible solutions. Addressing food related issues acknowledge our habits and relationship with food. Awareness is "the knowledge or interest of a topic that keeps the person well informed on a particular situation revolving the topic." To properly inform oneself about the problem and understanding a role in food waste, whether it means as a supplier, farmer, business manager, chef, or buyer.

Businesses, food suppliers, and consumers have a relationship with food waste. Its our job to discover these relationships and provide amenities so that the food waste is reduced in these areas.

Options to encourage positive, sustainable behavior, is growing on consumers. A great method of awareness is to measure your company sustainability green level, and compare with your surrounding competitors. You will be more knowledgeable about how much food one is wasting compared to others, along with other factors such as customer flow, takeaway amounts and income for certain dishes. This positive affirmation causes motivation and stimulation to others and in turn may attract more visitors wishing to support the cause.

Awareness At Home
Food waste also largely comes from our own homes. In a British study, the majority of food waste came from larger households, rather than restaurants or other families. It seemed that within homes, people were buying more food than they need, then not properly timing a lifespan of the bought product. Awareness and tracking your sustainability level at home offers the possibility to save money, eat healthier, and innovating a less wasteful culture at home.

Did You Know?
The Food Waste Index is our creative solution to creating, monitoring and sharing awareness within food waste!

It contains of an IOS/Android based app, that provides different actions/activities that a business owner can take to cut food waste. It monitors and measures your business level of activities and the Food Waste Index platform will over time deliver a INDEX ranking that shows business owners the position of his business unit and how to proceed.
Ways To Reduce and Measure Food Waste (Measure)

"You Cannot Change What You Cannot Measure"

The hierarchy of food waste shows the largest way to avoid food waste is through prevention. Granted, no matter how much waste is prevented there will always be some leftover prices that are not edible. This can be spoilage waste, trim waste, or contamination of food.

So that means we need to measure in order to manage assets handled. There are many ways to measure food waste, even outside of the kitchen! Because food is constantly discarded in the production process, we must measure and create guidelines aligning with different sectors in the food production process. Everyone- consumer, producer, suppliers, or waiter- can take a closer look at their process and make easy reductions, and calculate savings from wasted food. As the saying goes, you cannot managed what is not measured.

If you work in the food industry, ask yourself if a system is already set in place for measuring foods and how it is monitored within the company on a daily basis. Do these systems work?
Reasons for wasting food go beyond carelessness. Other reasons are usually due to inefficient usage of food which leads to things such as spoilage, expiration, overproduction, quality of the food that may not fit into recipes, or equipment problems in the kitchen that make foods to be prepared. Equipment problems can be include freezer breakdowns, or placement of food in refrigerators, which when occurring can be a lot of spoiled food, and a heavy ticket.
Ways To Reduce and Measure Food Waste (Measure)

Within Food Waste Tech our products are specifically designed to track different types of food waste, examining the process of waste flow in the kitchen and waste produced by consumers. Still, we have a few basic tips we would like to share for anyone to begin reducing their food waste starting today, at home or at work.

1. Inventory
Be aware of what you have in stock, and keep inventory up to date. Before setting off to the store, try to check and know what ingredients you may already have at home. Food Waste Tech provides analytic reports with our scale system that make it easier to know how much food is being wasted and how much should be purchased by better analyzing customer demand. Even for those struggling to manage food waste from home, tackling inventory is a start that can make a big difference.

2. When Purchasing
Be mindful about what food is in season, pay attention to where you are shopping. Food that doesn't meet visual requirements is often discarded before it reaches a supermarket. See if a supplier is selling seasonal produce, and if they would give a deal with the less pretty looking produce. This saves a lot of food from being thrown away, and add a nicer deal for your buy. Plan recipes in advance or when deciding a menu, continue a dish in a still existing supply or ingredient to be used.

3. Keep Staff Involved
Food waste is largely a behavioral problem, which means even with auditing, a big part of the solution is mental. Sustainable behaviors and actions are needed to create any sort of significant change within businesses. Reward those in your staff behavior and break the taboo to speak about food waste. Allowing people to speak openly on the challenges they find to better identifies the source of your problems. Welcome the discussion, and enforce positive feedback. You may be surprised what you find out.
Ways To Reduce and Measure Food Waste (Measure)

There are two types of food wasted in a restaurant setting that we pay attention to for measurements. They are back of the house and from of the house food waste.

**Back Of The House**
Food that is thrown away in the kitchen or that is being stored for preparation. We’ve already mentioned some of the reasons for waste: Trim waste, spoilage waste, overproduction, expired waste, overcooked food, and contamination. When measured it allows the kitchen to easily track other pieces of food discarded that can still be used.

**Front Of The House**
This is otherwise known as Plate Waste, which consists of any leftovers or perfectly edible food that was laid to be thrown away by a customer or miscellaneous reason. Plate waste refers to food that is still perfectly good for consumption, yet is wasted for reasons such as the portion size being too much, or dislikes of the customer.

Studying these cycles better helps a business to find out what can be saved. We use different types of food scales measuring both front and back of the house waste. You are also able to add notes noting food items, inventory, that the scales add into a bluetooth system, and we deliver a report detailing you about your auditing habits, portion sizes, food item types and consumer behavior. Businesses then have the feedback to know what the customers are eating, how much, and how to plan proper amounts for expected crowds. Not only will you have a better idea what people like to eat, but you can also track the types of foods and how much food is being wasted, and save a significant amount of expense.

**Did You Know?**

Food Waste Tech Provides detailed solutions for businesses with a cloud service connected to various scales for food waste, otherwise known as our Food Waste Control system. The intelligent scales scales can be connected to a Android or Windows based terminal. It instantly reports food waste from where, what it is and for what reason divided by number of portions.
On Site Organic Waste Management (Recycle)

Although restaurants are able to significantly reduce the amount of waste within their restaurant, it is nearly impossible to lower all waste. By-product is normal and usually comes from food pieces that cannot be used in a restaurant, such as a peel, bones, or Rines.

A common theory is that food is an organic substance, therefore can be discarded and decompose, and not create a big problem. But the way food decomposes is what affects its environment so heavily, and there is a process behind it.

When organic food is not taken care of properly, often, it is usually unsorted, transported for a heavy fee by a garbage company and dumped into a land fill. The food waste is then mixed with other types of inorganic waste that cannot decompose, such as plastics, or even toxic substances, like pesticides, cleaning fluids, or other toxins. This causes it to decay in an un-beneficial process and the food loses its nutrients and turns into methane, a green house gas which contributes heavily to climate change. Additionally, food has a lot of water content in food, when these item are thrown into a landfill, it combines with a lot of other toxic chemicals that cannot be disposed of in any way, when the water combines with these materials it creates a toxic slush known as leachate. This toxic slush can also leak into groundwater and contaminate rivers and lakes.

Food waste is actually a valuable resource. When treated properly, food waste can be used to enrich soils and nutrition rather than be mixed in a toxic landfill. Rotten food accounts for 34% of methane emissions. Treating food on site avoids these emissions, and extra costs of transportation, landfill, soil destruction, and methane production.

There are a few sustainable options for waste treatment that are quickly gaining international attention, including composting, anaerobic digestion, biogas, and aerobic digestion.

Composting is the process of turning organic waste into a soil nutrient dense substance. It is a healthy and beneficial natural solution which creates a valuable source out of waste.
Composting

Composting is a way of recycling the nutrients from products and returning them to the earth so they may be used again. Why is soil important as an ecosystem, and it’s also being affected by human activity and carbon emissions into the atmosphere. Soil holds twenty five percent of the world’s species, filters our water, helps regulate the earth’s temperature and provides foundation for our basic ecosystem. Essentially we need it, and thanks to compost, there is an opportunity to benefit it.

This sort of solutions creates an abundant and necessary resource we need for our food, is simple, natural and can save many places the extra cost to take trash to a landfill. People now have the opportunity to save money, take care of their waste on site,

The prominent features determining a compost solution is the Carbon: Nitrogen ratio (Brown materials vs Green Materials), temperature, oxygen, moisture, and PH levels. When these ideal conditions are achieved with the above variables, microbes flourish, and the compost heats, eliminating pathogens, and begins to break down the material.

Did You Know?

Food Waste Tech has an On Site Organic Waste Treatments which serve as solutions for restaurants or hotels to deal with their food on site. We allow you to turn your organic waste into compost from where you work, reducing transportation costs and trash. Our main device is called Food Waste Master, a unique composting machine for an on-site treatment converting food waste to a soil fertilizer.
Other Methods Of Waste Management

Anaerobic Digestion is the process of natural decomposition of organic materials without oxygen present (hence anaerobic), and produces biogas and digestate that can be used for energy or nutrients. This organic matter used in Anaerobic digestion can use organic waste coming from food waste, sewage, and sludges that comes from different areas in a municipality. The solution creates possibilities for alternate eco-friendly energy sources and extinguishes the problem of placing organic waste into the landfills or other parts where it is prone to contamination. Anaerobic Digestion uses food waste to make this happen, but other forms of waste are added as well, including organic waste, water waste, and manure. In short, it creates the option that replaces the need for chemical fertilizers or other harmful nonrenewable energy sources. The by-products of anaerobic digestion are biogas and digestate, that creates sources of energy for municipalities. The majority chemical energy created in this process is methane.

Biogas is part of the product that comes from anaerobic digestion. It is a naturally made gas occurring in the process of anaerobic digestion that has a high amount of energy, and can even serve to power systems such as electricity, house heating, even serve to power cars (being known as Bio-NGV, instead of using gasoline or diesel).

Digestate is the solid remains of the broken down organic material in the anaerobic digestion process.

Finally, there is Aerobic digestion, which is a slightly faster process than anaerobic digestion. Because oxygen is present, aerobic digestion has bacteria and small organisms that consume the organic matter and turn it into carbon dioxide. It reduces the waste volume and turns it into liquid. The process is much faster than anaerobic digestion, and often needs less management in the process, therefore is less expensive and complex.
Why Start Now?

There is no denying the effects that climate change has brought for our planet. Most scientists in the field have agreed there is a 95% chance that the heating that is occurring over climate in time is contributed mainly to human activity. The news means future problems can be devastating, but we still remain hopeful. Humans and technology has also shown us the persevering ability humans have to adapt to better out conditions, and the solutions are evident in practice that together with an overwhelming support, we can weather the change expected to come.

Large cities, municipalities and leaders have a responsibility align current projects with the goals and circumstances presented by international recognized panels. Much knowledge lies to the people as well. The sooner we act to counter these problems can be less expensive than repairing the damages that are expected to come in the future, such as rising sea levels, increased tropical storms and natural disaster, inflation, increased immigration, and droughts.

Changing the way we act today can help to prevent the degree of devastation. We can begin to envision a future with renewable global energy, efficient land use, stable economy, and predicted demographic trends which we can aid to. This will create a higher standard of living for all. By endorsing technologies that are low carbon, and encourage practices for countries to become more carbon neutral, that will regulate the planets climate. We can do this with efforts of new technology, and cooperation with the knowledge the people have to make a change. When we solve one problem, we begin to solve many others on their own. Food security and efficiency will lower climate risks, hunger, extra costs for businesses and cafes.
Conclusion: Play your part!

In our closing, we finally ask you to consider the changes you can make and become a part of this conversation. Through Awareness, Measurement and Recycle, we recommend implementing these factors into your daily consumer and/or business lifestyle. Show support for those trying to reduce food waste. Buy food in bulk or from your local provider, or support food products that sell forms without plastic packaging. Support sustainable restaurants / cafes. Try to limit or lower your consumption of meat and dairy products, but be sure to play your part. Most importantly, share the message with others. The world can be a better place based on your decision.

Who Are We?
Food Waste Technologies Ltd (also called Food Waste Tech) is a company that offers products and solutions with the overall goal to reduce food waste, and the carbon footprint. With superior partnerships Food Waste Tech also has a footprint to become a hub whereas individuals and companies involved in food waste reduction can share experiences/ideas and help us all to reach the overall goal to cut food waste by 50% before 2030.

Our Mission
To be a service for restaurants, hotels, and other businesses looking for training, solutions and products that reduce their food waste and carbon footprint.