Forum: Economic and Social Council (ECOSOC)

Issue: Promoting Sustainable Consumption Patterns: Reducing global food waste at consumer and retail levels

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Introduction

Food waste is a growing, yet already large issue that intersects with many different areas of the supply chain and global economy. Food waste includes edible and inedible parts, drinks, processed foods, raw foods, and semi-processed foods removed from the supply chain. Around the world, food waste is increasing because of unsustainable and improper consumption, transit, and disposal. Around 13.2% of food produced does not make it from the production site to retailers, and an estimated additional 19% of global food production available to consumers is wasted across all sectors, such as the home and commercial sites.[1] The amount wasted is equivalent to ⅕ of the global food supply. This results in the creation of around 1052 million tonnes of food waste globally.[1] While this food is wasted, an estimated 783 million people are affected by hunger each year. Furthermore, food waste makes up around an estimated 8-10% of global greenhouse gas (GHG) emissions, and uses up roughly 30% of the world's agricultural land.[1]

Commodity	Volume of waste *(million tonnes)*[3]	% of total production	Value of waste *($million)*[4]
Fruit & vegetables	449	26%	160,157
Roots, tubers & oil crops	261	15%	44,095
Meat & animal products	153	12%	99,738
Cereals & pulses	196	14%	56,199
Fish & Seafood	25	44%	-
Other	90	6%	8,930

Individual Breakdown of Wasted Products[2]

United Nations Sustainable Development Goal 12 directly targets the sustainability of food as a key focus for the future of a sustainable world. It calls to "ensure sustainable consumption and production patterns".[3] which would mean a heavy reduction in global food waste production. Supply chains also exist at imbalances between more developed and developing countries, as developing countries produce higher amounts of food waste compared to developed ones.[4]

Definition of Key Terms

Food Loss:

Food loss is all of the crop and livestock edible quantities that either directly or indirectly exit the food system and supply chain after harvest/slaughter. This is done by incineration, throwing away, or by other methods; the food material does not re-enter the supply chain after loss up to, but excluding the retail level.[5]

Food:

Any substance that is processed, semi-processed, or raw, intended for human consumption. This includes drinks and any substances that are used in the manufacture, preparation, or treating of food products.[6]

Anthropogenic:

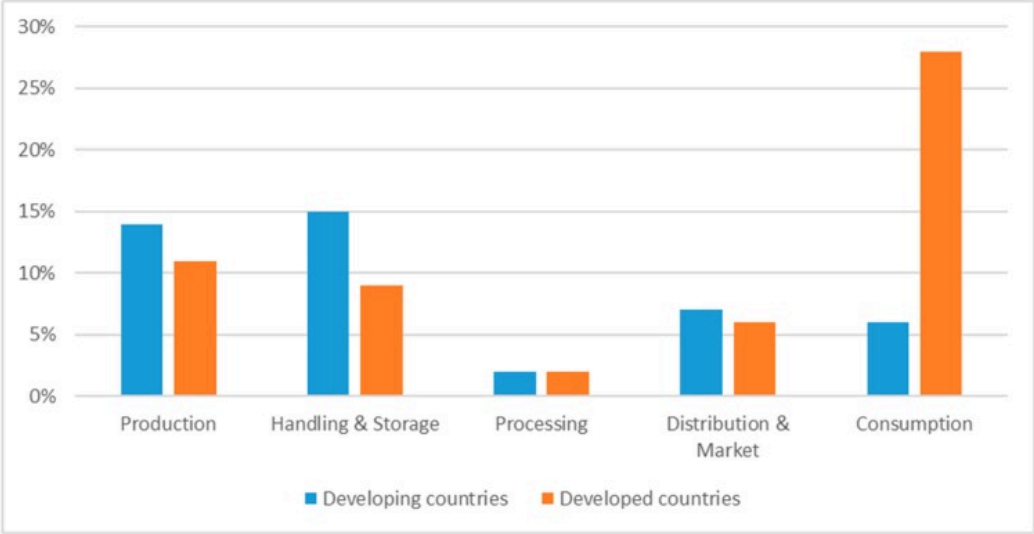
Of, relating to, or resulting from the influence of human beings on nature.[7]

Greenhouse Gases:

Greenhouse gases (GHGs) are natural or anthropogenic gases that constitute parts of the atmosphere. They absorb or emit radiation at certain wavelengths in the radiation spectrum of Earth's surface, in doing so causing a property called the Greenhouse Effect. This greenhouse effect creates prolonged warming periods. The primary GHGs are: Carbon dioxide (CO_2), Water Vapor (H_2O), Nitrous Oxide (N_2O), Methane (NH_4), and Ozone (O_3).[8]

Background Information

The creation of food waste is primarily driven by a variety of factors at the production, transit, economic development, and societal levels. Consumer patterns and economic factors are the primary reasons why food becomes wasted, especially in developed countries. In developing countries, where food production has less guardrails, food waste is produced at much greater rates: A comparison of 20% in developed countries and upwards of 30% in developing ones.[9]



Graph showing food loss disparities between developed and developing countries[9]

Losses in Production

Losses During Production

Food loss during the production stage primarily occurs in developing countries due to a variety of factors. The biggest factors present themselves when access to farming tools, pesticides, fertilizers, other chemical agents, educational courses, extended work and service, research, financial, and meteorological institutions is not a reality for the

everyday farmer. Little access to machinery in developing countries and a reliance on manual labor leads to an insufficient labor force and slow harvesting speeds. This, in turn, leads to a loss of crops due to the inability of the farmer to harvest them all before spoilage.[10] Farmers will also commonly overproduce a crop to combat uncertainties, pests, and other environmental conditions. However, this oversupply decreases the market price of the produced crops, and leaves more crops unharvested.[10]

Losses During Transportation

Food loss during transportation occurs primarily due to spillage, degradation, and storage. Products such as meat, fish, and crops like vegetables and fruits are especially susceptible to storage losses and spillage losses during loading. Timely transit is also imperative to prevent spoilage, as delays lead to loss. In places with poor infrastructure, this is exacerbated by already poor travel times, which allows for more delays.[10]

Losses during Consumption

Consumers tend to prioritize more attractive products than less attractive products with bruises, blemishes, or weird shapes.[11] Over-purchasing also causes higher quantities of food to be wasted, as consumers inevitably are unable to eat all purchased products, allowing spoilage.[12]

Environmental Impacts

Greenhouse Gas Emissions

The carbon footprint of food waste from farms is roughly equivalent to 2.2 gigatonnes of CO_2 an amount equal to around 75% of the emissions from cars in the United States and Europe.[2] The primary gas produced by decaying waste is Methane (CH_4). Methane contributes to warming at a higher rate than carbon dioxide, around 29.88 times greater.[13]

Commodity	Greenhouse Gas Contributions *(Million tonnes, CO_2 equiv.)*	% of GHG contributions from food waste	Commodity as a % of overall tonnage waste	Biggest contributors
Meat and animal products	856Mt	40%	13%	Milk & Bovine meat
Cereals and pulses	515Mt	24%	17%	Rice & Maize
Roots, tubers and oil crops	307Mt	14%	22%	Palm oil
Fruit and vegetables	182Mt	8%	38%	More highly perishable fruit & vegetables (e.g. tomato, watermelon)
Fish and seafood	107Mt	5%	2%	Shrimps & prawns *(highest per tonne)*

Breakdown of Carbon Emissions by Individual Products[2]

Water Use

45 trillion gallons of water go into producing food that ends up becoming food waste. That number would mean that 24% of water used for agriculture globally becomes wasted due the wasting of food.[14] Most water used during production does eventually return to the water cycle, but due to transportation and other factors, this rarely means it returns to the place where it was originally taken from. This has contributed to the growing water disparities between regions as the world gets warmer.[14]

Land Use and Degradation

Food waste uses up land in two primary ways: Landfills and agriculture. Landfills are the third largest source of anthropogenic methane emissions.[15] About a quarter of the world's land without ice has been degraded due to anthropogenic conditions. Agricultural fields contribute up to 10-20x higher rates of soil erosion than the soil formation rate. These agricultural lands do not see their products used to their full capacity thanks to food loss in the supply chain.[16] This food loss also contributes to acidification in the soil.[2]

Major Countries and Organizations Involved

United Nations Food and Agriculture Administration (FAO)

The FAO launched the Food is Never Waste Coalition (FNWC) in 2021. The FNWC works to

ensure that SDG 12 is met by the 2030 timeline. It unifies NGOs, UN organizations, and Countries in working to reduce food waste. The FAO also serves an educational role, and funds research initiatives into the state of global food waste. The FAO also works to increase investment in food waste reduction, and build collaboration in the food supply chain. See also:

- International Day of Awareness on Food Loss and Waste, 15 January 2020 (**A/RES/74/209**)

Champions 12.3 (Champions)

Champions operates as a group of executives from governments, businesses, NGOs, farmer organizations, and civil societies. The organization is dedicated to driving progress on SDG 12, specifically the topic 12.3; 12.3 covers food waste reduction by 2030. The goal of the organization is to mobilize action and advocacy, and is working to build a movement.

World Wildlife Foundation (WWF)

The WWF is dedicated to the conservation of global biodiversity. In this, the WWF finds food waste to be a priority, as it contributes greatly to climate change, and also contributes to land use and land degradation. The WWF works with food businesses to understand the “whys” of food being wasted, and also how to reduce this waste.

France

In February of 2016, France voted to accept a law which would forbid supermarkets from destroying unsold food products. After passing, the scope of the law has expanded to include restrictions on catering for destroying unsold food, heavier fines, and an obligation to offer a “doggy bag” option.[17]

Timeline of Events

Date	Description of Event
April 29, 1961	The WWF is founded in Morges, Switzerland. The WWF becomes a major conservation NGO.
September 2015	The UN general assembly votes to accept the SDGs as guidelines for development up to 2030. SDG 12 advocates for the reduction of

	food waste.
January 15, 2020	The UN general assembly votes to accept the creation of the awareness day. The issue becomes more publicized.

Previous Attempts to Solve the Issue

Composting Initiatives

The most common solution implemented to combat food waste comes in the form of composting. Composting has been effective for two primary reasons: One, it cuts down on the excessive land use of landfills, and two, it cuts down on the environmental impacts of leaving waste lying around. The nutrients are recycled into new, fertile soil that perpetuates the cycles of the planet.[6] Households can compost, and many have taken up composting, this is an effective, individual level solution that is applicable across many nationalities and economic backgrounds.

Consumer Education Campaigns

The International day of awareness on Food loss and waste was launched by the FAO and UNEP to spread awareness on the topic of food waste internationally. It is part of a wider consumer education campaign, targeted in influencing consumers to make educated choices about their diets.[18]

Possible Solutions

Change in food industry practices

A primary aspect of consumer behavior relating to the overpurchasing of food comes down to predatory tactics on the part of retailers and corporations. A reduction in deals that emphasis overpurchasing, or even a ban on the practice, could aid in shaping consumer behavior positively.

Hydroponics

Compared to traditional farming practices, hydroponic farming uses 90% less water, as water is recycled through the system. It also uses significantly less space, and has vertical applications.[19]

Better Access to Proper Storage Conditions

Proper facilities with controlled humidity, temperature, and sunlight, alongside a lieu of other factors, would be beneficial in preventing spoilage or damage.

Endnotes

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