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Australia, Spoilage and Waste

Over 1.3 billion tonnes of food are thrown away globally every year (FoodBank). This waste is wreaking havoc on our environment, our economy, and the inhabitants of our planet. Most of this waste is coming from highly developed, wealthy countries which throw away hundreds of thousands of pounds of food every day while those living in third world countries are struggling to find any food at all. The luxury of waste has caused an unnecessary rift between the wealthy and the poor. Food waste affects all aspects of life for people across the globe.

Australia, a country of over 25 million people, sits in the South Pacific ocean. Around 22.6 million people, or 87% of the population, live in urban cities near the coast, while the remaining 2.4 million people, around 13% of the population, live in rural areas inland. Due to the hot, arid climate of the country, the center of the island, also known as the outback, has few human inhabitants. Australia is controlled by a constitutional parliamentary monarchy where government employees oversee many aspects of government organized programs. While nearly 48% of the land in Australia can be cultivated, the country is not a major exporter of crops. The average farm is around 4,000 hectares in size and commonly produces wheat, barley, and sorghum. Australia's main exports include iron, coal, and petroleum.

The typical Australian family contains two to three people. Large brick or concrete apartment complexes and stucco suburban neighborhoods are common because of the population density near the coasts. Education is important in Australia, many residents attend college and then work in the public service industry or at a government agency. On average, Australian families eat less meat than American families and are more open to various diets. A typical Australian dinner may consist of protein alternatives like tofu or eggs, vegetables, and a type of grain, like rice or bread. Because of the abundance of restaurant choices in a developed country, families in Australia eat out more often, around 4-5 times a week.

While only 11% of the Australian population lives below the poverty line, there is a large socioeconomic gap, which causes rifts in food availability and access to healthcare. Nearly 15% of the population is food insecure (Understanding Food Insecurity in Australia). Children are more adversely affected by food insecurity because they are still growing and need nutrients to avoid becoming malnourished. Similarly to children, indigenous people in Australia are heavily impacted by food insecurity with nearly 30% of their population struggling to find a stable food source each year. Because of the physical distance from urban areas and the refusal to assimilate to Western culture, indigenous communities in Australia have suffered from a higher poverty

rate. While Australia is seemingly open to diversity, the gap in food security for indigenous communities is an often neglected issue.

Australia wastes the most food per capita in the world. On average, each Australian wastes around 300 kilograms a year; for comparison, the average American wastes about 99 kilograms each year. Food waste in Australia has been steadily increasing over the past 10 years, and there has been a particular surge in waste during the past 4 years. Food waste also generates extensive expenses. When an item of food is discarded, all the resources used to create that item are discarded as well. The money spent on growing, processing, packaging, shipping, and eventually disposing of this wasted food is thrown into the trash along with the food. Since 2016, the amount of money spent on wasted food has grown exponentially, with the Australian government now spending over \$20 billion dollars a year on this issue(National Food Waste Strategy). Each year Australians throw out over 7.3 million tonnes of food(FoodBank).

According to the National Food Waste Strategy Report created by the Department of Environment and Energy, Australia has a goal of halving its food waste as a country by 2030. Currently, the Australian government has designated 1.3 million dollars to create a baseline for waste, research solutions, and develop an implementation plan(National Food Waste Strategy). While this is a great start, their plan is flawed. There is no need to develop a new baseline for waste as Australia has already been recording their food waste as a country for the past 5 years. Additionally, while research is important to understanding the issues, much of this research has already been performed by larger associations like the EPA and the United Nations. There isn't time to waste on unnecessary research. If current trends continue, the impacts of food waste may grow from the potential threats of hungry people and climatic distress to the sure dangers of starvation and environmental ruin.

The EPA has developed a food recovery hierarchy to use as a guide when reducing food waste. The first course of action is reducing food waste at the root. This involves creating policies against waste and consumer education programs. The next layer is feeding hungry people with surplus food through donating to local food banks or developing systems for transporting excess food to those in need. Then comes feeding animals and livestock with surplus food to help prevent the need for food to be grown for the sole purpose of being eaten by these animals. Next, waste should be converted into energy to decrease the use of fossil fuels. After that, waste should be composted and, when necessary, placed in a landfill.

Australia's neighbor, New Zealand, has halved its food waste since 2015. This was done almost solely through consumer education campaigns and the passing of anti-food waste laws. Food waste has many environmental effects, such as increased methane emissions, a leading cause of climate change. These effects are immediately impacting both Australia and New Zealand. Once New Zealand residents understood the implications of food waste on their little island nation,

change started to happen. A similar result can be expected in Australia, which is why it is vital that Australian residents understand both the immediate and long term effects that food waste will have on their country. One of the most effective consumer education campaigns in New Zealand is Love Food Hate Waste. Their goal is to limit individual and household food waste through commercials, ad campaigns, and community events. Through these mediums, the organization focuses not only on the effects of food waste but on how to limit it. Love Food Hate Waste highlights the importance of planning food purchases, utilizing proper food storage, and getting creative with leftovers (WasteMINZ). As spoiled produce within consumer households is one of the leading causes of food waste in Australia, programs with missions similar to Love Food Hate Waste would be effective there as well. New Zealanders also have access to an app called Foodprint, which is used by many educational institutions, businesses, and personal homes. It creates a standardized network for food waste to follow on its way to someone in need. This model would also work well with Australian residents because they live on a developed island in the South Pacific. However, Australia is a larger nation than New Zealand and may need to break up the food waste network into smaller sectors.

Change starts with consumers. A shift in the mindset of Australian citizens in response to new understanding about the threat of food waste and what actions they can take to mitigate its effects can lead to changes in the business sector as well as within the Australian government. For example, as consumers make different purchasing decisions, businesses will change their practices to accommodate the consumers' desire for more sustainable options. Also, waste-conscious individuals are more likely to elect waste-conscious representatives and push for policy changes that will help reduce food waste.

Since a vast majority of the population lives in urban areas, this is where most of the food waste comes from. Due to the high population density in urban areas, this is also where nearly 93% of people with food insecurities live. Currently, the waste in urban areas is being placed in landfills. This food should instead be diverted to those in need. There is an organization in Mauritius, a small island country off the east coast of Africa, called Foodwise whose goal is to transport excess food from businesses and institutions to those struggling with food insecurity. Similar programs, like Ozharvest, do currently exist in Australia, but they are small and do not have a large impact. For example, Ozharvest has 11 locations, but nearly all of them are located in the southwestern part of the country. More grants and donations should become available to these organizations in order to increase funding for food waste management. Specific grants targeted at the construction of buildings or re-distribution centers in less populated areas would benefit many food waste organizations and incentivize increasing the spread beyond large cities. Although the money already designated by the Australian government to fight food waste may seem like a perfect solution, little of this money is being committed to local, pre-existing programs. The money for these grants could be partially supplied by the Australian department of Agriculture, Water, and the Environment as a regular part of their annual grant funding.

Many Australian packaging plants are located at least 1 hour away from the main cities to make use of otherwise infertile land. However, this also means these packaging plants are not close enough to any food recycling centers to benefit from them. More food recycling centers need to be developed in rural Australia in order to help reduce waste not only from rural communities but also from food packaging plants. These centers should take advantage of their rural location and use maggots or worms to break down the waste. Singapore has been using maggot farms as a way to decrease the amount of food waste they produce due to the fact maggots require little maintenance and can eat over 200 times their body weight in a day. These maggots or worms can be fed to poultry, which removes the need for extra food to be grown as feed for these animals. These farms have been shown to be a great method of decreasing food waste and creating a closed cycle, so as to not generate any new waste.

Greenland, another country actively fighting food waste, has been anaerobically decomposing waste in a controlled environment. As this waste rots, it emits methane. This methane is then filtered and purified before being used as fuel for buses, trains, and cars. This method is not the best solution as methane is still being released into the atmosphere; however, it does decrease the need for fossil fuels to be produced as a way to generate power for transportation vehicles. Due to Australia's widespread use of public transport in urban areas, energy from the harvested methane would be able to be used almost immediately.

Food waste also has negative implications on our environment. When food is brought to a landfill, it is buried under other waste and no longer has access to oxygen. This causes the food to decompose anaerobically which, in turn, releases methane, a greenhouse gas proven to be 28 times more potent than carbon dioxide over a 20 year period(OzHarvest). For Australia in particular, this is especially hazardous due to the thinning of the ozone layer above their continent. While decreases in food waste may happen, it cannot be completely eliminated. For these reasons, composting is a viable response to the remaining waste that will occur even with other policies and programs in place. Composting is a better alternative to placing excess food in landfills. This solution also brings about potential uses for the extremely arid environment in the center of the island and in rural communities.

Food waste is a potentially catastrophic issue that if not addressed soon, may ruin not only Australia, but our planet as a whole. There are clear steps Australia can take to reduce their food waste and, in doing so, set a precedent for other countries to follow. Other issues like climate change, malnutrition, and hunger are all linked to food waste. We already grow enough food to feed everyone, so we need to stop putting this food into landfills and start putting it into the hands of the hungry.

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