

## Waste Management System for Food Waste in Western Australia

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### Abstract

*Western Australia contributes to the third most waste in a household per annum in Australia. Food waste is one of the major causes of climate change and contributes to greenhouse gas emissions. The UN estimates that food waste costs the Australian government up to \$20 billion annually. I have been working on a major project to analyze factors that contribute to food waste. Food production, Retail and Consumption are three factors that increase food waste in the developed world.*

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### Keywords

*Waste Management,  
Food Waste,  
Western Australia*

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## 1. Introduction

Over the years, globally waste management has increased exponentially, and this rapid development only accelerates our trouble with climate change. In Western Australia, waste

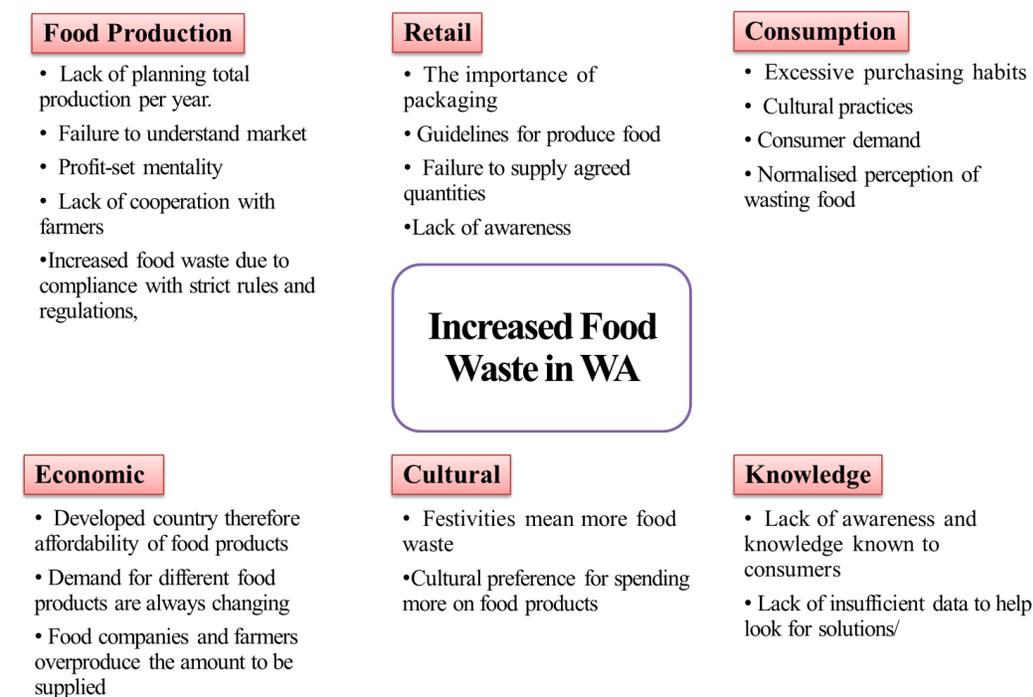
production is higher than any of the other neighboring states in Australia. Therefore, a lot of work is required to be done to ensure that the waste production per capita decreases. Over the years developed countries have found ways to mitigate other factors of waste management like reducing plastic waste, however, the problem arises with food waste as this problem is often overlooked or neglected by countries from the developed world.

Thus, improving the waste management system for food waste in WA is crucial. According to the UN, food waste is defined as the removal of food that is safe for consumption but has been removed because of poor management and economic behavior (Parfitt, Barthel and Macnaughton 2010). It is important to differentiate food waste with food loss as the process of food loss is directly related to the process of the production of food, harvesting and distributing (Lebersorger and Schneider 2011). In Australia, it was estimated that both food loss and waste costs the Australian government up to \$20 billion annually (Food Bank WA n.d.). Statistics from the National Food Waste Assessment from the Australian Government, have shown that the state of Western Australia (WA) contributes to the third most waste in a household per annum being behind states like Queensland (QLD) and Australian Capital Territory (MASON, et al. 2011).

For this project, I have been hired by the state Government of WA. My job requires me to research and analyse factors that contribute to an increase in food waste production. My objective is to look for solutions and provide a rationale to improve the increased food waste problem within the geographical location of WA. In doing so, my research will look at the major causes and learn the how all the factors are interconnected.

## 2. Materials and Methods

### Brainstorm of system influences



### Major Factors

Food waste is one of the most challenging factors in the developed world that need to be addressed if we are to combat climate change. Increased food waste leads to an increase in landfills and from the decayed food helps increase in methane, a direct source of greenhouse gas emission (El-Mashad and Zhang 2010). To tackle increased food waste, it is important to look at three significant factors that add to food waste.

The three factors that contribute to food waste are outlined here and are briefly explained: (from the above brainstorming chart that I have presented)

#### 1. Food processing and production:

This is the primary stage of how raw materials are processed to be converted into food and in developed countries this is where the most amount of food is wasted. This is due to poor management of supplies and the compliance of following regulations that are set by the management that require to throw away products that were not fit. This means for example, if a factory produces a can of chickpeas and due to default machinery, the can is then dented then due to this a whole batch of chickpeas would be called out for disposal.

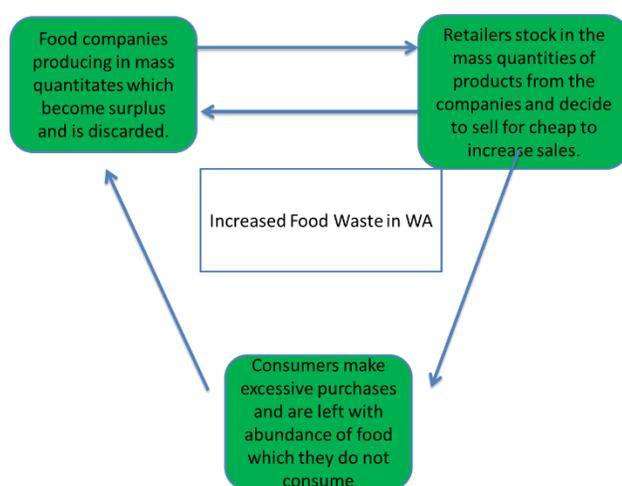
#### 2. Retail

Retailers play a role in making sure that consumers can purchase food items. However, their practices which is too ensure consumers get the right food often result in increasing food waste. This is mainly because of how most retail supermarkets often dispose off food items a day or two before the product has reached its expiration date.

#### 3. Consumption

Consumers play the biggest role when it comes to the issue of food waste especially in developed countries. Excessive purchasing due to promotions made by retailers or due to events which result in consumers just wasting food in their households. Due to a lack of awareness and education a lot of consumers often think its “natural” to waste food without fully understanding the role they play in food waste.

### Major Factors Diagram



### 3 Results and Discussions

(After listing out the three factors, I am going to now explain it in detail while specifically applying it to WA)

Linkage between Food production, Retail and Consumption (all three factors have been interlinked together)

- i. Failure to understand market forces
- ii. Lack of communication with farmers
- iii. The importance of packaging
- iv. Increased waste due to compliance with strict rules
- v. Cultural festivities
- vi. Lack of awareness

Failure to understand market forces

When food companies produce their total amount of production, they fail to understand the market demand and supply that retailers require (Kummu, et al. 2012). For example most food companies in WA, like Harvey Fresh, Brownes tend to overproduce the amount of milk they make because they often fail to understand the market supply from their retailers. This can be related to understanding consumer behaviour and the fall in demand for dairy which retailers and food companies fail to acknowledge. Another factor is how in farms, farmers overproduce more than the average size of production just to be on the “safe-side” resulting in large amounts to be wasted later (Papargyropoulou, et al. 2014). This was apparent when in 2016, farmers from WA were forced to dump milk because companies like Harvey Fresh did not need any more supplies of milk. The farmers were just following the contractual demands but due to the fall in demand for milk, the farmers now have to waste the milk by dumping it (Poloni 2016). This could have been easily avoided had there been an established form of cooperation between the companies and farmers to meet demand of the consumers.

Lack of communication with farmers

The “re-using is more expensive” attitude that food companies have result in more food waste. This is when food companies use the process of trimming which means they look for products that must meet the standard of weight and shape (Mena, et al. 2011). When the products do not meet the standards, they are disposed of meaning perfectly good food safe for human consumption is wasted off rather than being supplied to the retailers (Cordell, Drangert and White 2009). Another issue which is linked between food production and retail is when retailers cannot sell food products. This happens when products need to be shelved as they become surplus due to the fact they have reached their expiration date. However, Coles (WA retailer) had come up with a strategy to convert these surplus foods into energy and compost at a digestion plant (Ong 2016). This strategy shows that retailers in WA are taking beneficial steps in tackling food waste.

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## The importance of packaging

One of the key reasons to why most consumers tend to buy less or consume food products is because of the packaging this in turn adds to increasing food waste (Williams, et al. 2012). This is mainly because food companies design their “best before” or “sell before” date unclearly and in return this causes confusion and uncertainty over whether or not the product is safe for consumption (Williams and Wikström, Environmental impact of packaging and food losses in a life cycle perspective: a comparative analysis of five food items 2011). Another issue arises when retail stores around the world end up discarding products that have reached their best before date, but these products are still edible and can be donated to charities. In Sydney, Australia, OzHarvest Market have opened a rescued-food supermarket which donates the products which retail stores find to be surplus in order to combat food waste (Zhou 2017) .

## Increased waste due to compliance with strict rules

Following guidelines set by retailers to ensure consumers can purchase and consume the best produce food. This adds to food waste mainly because following this policy would mean that safe for consumption vegetables and fruits which are slightly misshaped do not meet the “to sell requirement” and are thrown out (Priefer, Jörissen and Rainer Bräutigam 2016). It’s not just produce foods that are affected but also tons of fish per year are thrown out by ships due to claims of capturing the wrong species of fish or not being stored in a cool place (Stuart 2009). To combat this issue of food produce in WA, retail companies like Woolworths decided to start campaign known as the odd bunch, where the misshaped vegetables are sold for a cheaper price and the money earned from selling these vegetables go directly to the farmers (Woolworths n.d.)

## Cultural Festivities

Food is wasted when the production exceeds demand, in return retailers in the developed world often promote the sale of goods for a cheaper price to sell more to consumers (Laing and Frost 2010). An example of this would be how the price of sausages and ham are made cheaper before Australia Day or Christmas. This in return adds to food waste because consumers buy more but consume less as they have an abundance of food left to consume. According to Australia’s Department of the Environment and Energy, it has been reported that in the whole of Australia, roughly 35% of \$10 billion dollars’ worth of food is wasted every year (Environment Government n.d.). To address this issue, food rescue group OZ Harvest have stepped up to collect the waste and donate to as many charities as possible. While to make Australians aware of the waste, environment group called Planet Ark have stepped up to make sure that people are made well aware of the wastage over different festive seasons.

## Lack of awareness

Consumers, retail industries and food production companies are all unaware of the role they play in increasing food waste. Each sector should be made aware through education and Laws should be implemented where the regulation of food waste can be reduced (Graham-Rowe, Jessop and Sparks 2014). Otherwise in a developed country like Australia it becomes easier for consumers to

afford an abundance of food products of which they tend to waste. Therefore, it is important to change people's attitudes through education. To bring awareness in Australia all around the many states a campaign known as the "Food bank" was created whose main aim is to reduce food waste in Australia as well as support those who are in need.

#### **4. Conclusion**

This report concludes with understanding the problems that exist starting from the very primary stage of food production to retail stores and then finally being sold to consumers. From the data that I have researched into I can say that from my findings Western Australia has made significant progress in reducing food waste. However, there are some serious issues that need to be addressed for instance ensuring that national guidelines that make food companies discard tons of food for default packaging need to be stopped. Moreover, retail stores should come up with strategies to sell or donate produce food that are misshaped. Lastly, a key priority would be to maximize efforts into creating campaigns to make sure that people are made well aware of the role they play because to tackle food waste it must be a collective movement, one where all participate.

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