



## **The Routledge Handbook of Food Ethics**

**Edited by: Mary C. Rawlinson , Caleb Ward**

**eBook ISBN: 9781315745503**

### **Ethics of Food Waste**

Miranda Miroso, David Pearson, Rory Pearson

In order to investigate the ethical implications of the food waste issue, this chapter considers the wider role of ethics in society and discusses general ethical issues in relation to food. In a more specific exploration of the ethics of food waste, food waste reduction is linked to reducing world hunger, reducing obesity and reducing environmental degradation. There is enormous scope for improvements in food waste reduction and this chapter identifies interesting developments which are aiming to reduce food waste at various food waste hotspots along the food system.

## **Introduction**

Recent reports indicate that 30–50 percent of all food produced for human consumption is wasted and hence not eaten by them (FAO 2011 IME 2013). Thus individuals and businesses continue to make decisions that result in this massive amount of food waste (Pearson, Minehan & Wakefield-Rann 2013). Although food losses occur throughout the supply chain, in developing countries most of this is prior to purchase by consumers—mainly due to limited investment in efficient storage, transport and processing infrastructure, whilst in industrialized countries most is wasted by consumers—mainly due to food being relatively abundant and economically cheap (FAO 2011). Thus the magnitude, pervasiveness and persistence of food waste suggest it remains a complicated issue.

In order to investigate the ethical implications of the food waste issue, this chapter first considers the wider role of ethics in society (section 2) before moving on to discuss general ethical issues in relation to food (section 3). The case is made in these sections that an ethical food system would strive to supply all individuals with regular supply of a variety of healthy foods. Further, the production, distribution and retailing would be carried out in an environmentally sustainable manner and where the welfare of animals is upheld. In a more specific exploration of the ethics of food waste (section 4), it is suggested that food waste reduction is linked to reducing hunger, reducing obesity and reducing environmental degradation. The links in each of these three areas are reviewed in turn. Responses to food waste are highlighted (section 5) prior to concluding comments (section 6).

## **Consideration of Ethics in Society**

Ethics is considered by many to be the study of morality (see for example, Williams 2012). In this sense it includes consideration of issues around what is “right” and consequently what is “wrong.” As thousands of years of philosophical scholarship and debate demonstrate, there are no clear answers.

However these endeavors have investigated questions of “What is the best way for people to live?” (Grayling 2011) and what actions by individuals support the collective “best way to live,” and hence are either “right” or “wrong” in a particular circumstance. Thus ethics has evolved to help understand the inherent tension between the individual and continuation of the community in which he or she is a member. This interdependence pits the instincts in an individual that encourage selfish competitive actions against those that recognize the benefits from co-operation that facilitates continuation of a robust community.

It is important to note that “right” conduct may or may not be in accordance with existing behavior such as social conventions, religious beliefs or even the law (Paul & Elder 2006). Thus ethics encourages removing cultural habits and personal beliefs to undertake independent thought involving analyzing and recommending concepts for “right” or “wrong” conduct. Although it is common to pose opposites, such as guilty or innocent, issues where ethics dominate are often much more complicated. As such most ethical analysis requires careful consideration of many facets that are integral to the issue. For example, with an issue phrased as “Is wasting food always wrong?” leads to recognition of the fact that there may be circumstances where wasting food is right or permissible. Thus ethics offers an approach to explore the array of interrelated and potentially conflicting circumstances around the enduring challenge of reducing food waste.

## **Ethical Issues in Relation to Food**

Alongside sophisticated technological and scientific developments in food production and nutrition, efficient means of food distribution, and unprecedented availability of food in some parts of the world, food is contested like never before (Lien & Anthony 2007). In a multicultural society it is natural to assume that there will be vastly differing ethical grounds for food related behaviors of individuals. Vegetarian, Kosher, Halal, and Vegan diets offer just some examples (Hepting, Jaffe & Maciag 2014). In addition to the differing ethical standpoints of individuals there is the question of whether they, in spite of living in the information age, have access to information that enables them to make informed choices, on ethical issues amongst other things.

Food has been loaded with cultural meaning and immersed in ethical boundaries for thousands of years. In a brief chronology of significant ethical issues in relation to food, Zwart (2000) notes the following:

- Ancient Greeks used the term “dietetics” to describe living and acting in accordance with nature where, due to the faculty of reason, mankind is forced to participate in a conscious manner.
- The Hebrew bible identifies those foods that are allowed to be eaten, and others that are not. For example, “Of all the larger land animals you may eat any hoofed animal which has cloven hoofs and also chews the cud; those which only have cloven hoofs or only chew the cud you must not eat” (Leviticus 11: 1–4). The author continues by noting that efforts have been made to explain why these seemingly arbitrary laws exist, which have looked into

health, hygiene, and other utilitarian concerns, with limited evidence to support them being found.

- The New Testament Gospel offers an alternative by removing such constraints on food. For example “No one is defiled by what goes into his mouth; only by what comes out of it...Do you not see that whatever goes in by the mouth passes into the stomach and so is discharged at a certain place? But what comes out of the mouth has its origins in the heart; and that is what defiles a person.” (Matthew 15: 11–17)
- Medieval and Renaissance times added another food ethic in terms of prescribing times of fasting or regulations for special fasting-days, such as abstention from meat intake on Fridays and the forty-day period of fasting during Lent.

Pressing ethical issues of concern in contemporary society include animal welfare, food security and equity of consumption as both hunger and obesity coexist, and finally environmental sustainability (Hepting et al 2014).

The treatment of animals (embodying both animal welfare and animal rights) is a major ethical issue in relation to food. For example, some consumers are concerned about how animals are raised and slaughtered. Live export of animals, and concentrated animal feeding operations (CAFO), also known as factory farms, are considered especially inhumane and major sources of concern. Adopting more vegetarian and plant-based diets is a common response to such ethical concerns.

Consideration of food supply or security leads to identification of some individuals being more food secure than others, such as those who are more affluent. Food security is defined by United Nations Food and Agriculture Organization as “when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and

food preferences for an active and healthy life.” (UNFAO 2015). Food self-sufficiency, on the other hand, refers to concept of sufficient food production to feed those living in the area under consideration, whether that is the local community or the whole country. The contention is that dependence on other areas to supply food creates vulnerability should supply lines be interrupted for reasons such as international tensions.

Consideration of the distribution of food leads to identification of significant inequities in food consumption. Some, often those who are marginalized, consume less food, and of even more importance, food of lower nutritional value. For example those on lower incomes are more likely to buy higher quantities of energy-dense foods that are high in fat and sugar because they are more affordable and accessible to them. This is further demonstrated by Sustainable Organic Local Ethical (SOLE) products where the economically disadvantaged may not have practical access to the full array of choices afforded to more affluent consumers (Hepting et al 2014). This has led to suggestion that ethical consumption of food may be an elite social practice, especially since some niche markets are positioned to serve wealthy educated consumers (Johnston, Szabo, & Rodney 2011). Thus the ethical issues in relation to food are largely dependent on which part of the food chain that is put under scrutiny. Attention is now focused on the food wasted across the food chain and the ethical issues related to this waste, from farm to fork and beyond.

### **Ethics of Food Waste**

When considered on a global scale the amount of food wasted is staggering—as previously mentioned around 30–50 percent. Theoretically this food could be used to feed those who are hungry today and make a significant contribution to meeting the anticipated increase in demand

from food that will accompany the growth in global population. In addition and not often discussed, there is the issue of food being wasted due to excessive consumption by some individuals. This over-nutrition is evident in the prevalence of obesity around the world. Furthermore, the resources used to produce, transport, process and store the food that is wasted have also been wasted when food is thrown. In an era of increasing concern about environmental sustainability this waste of productive agricultural land, clean water, agricultural chemicals, and non-renewable energy resources (particularly those that contribute to green house gas emissions) is of particular concern. The ethical issues of each of these, namely, the role that food waste reduction could play in reducing world hunger, reducing obesity and reducing environmental degradation will now be discussed in turn.

### **Reducing World Hunger**

According to the United Nations Universal Declaration of Human Rights, “All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood” (Article 1) and “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food...” (Article 25) (UN 2015). These foundations for societal workings and processes include explicit noting of a food system that provides all people with safe and healthy food while ensuring those working in the system an adequate income. Further elaboration on this concept of a rights-based approach to food security can be found in this handbook, in “Responsibility for Hunger in the Developed World.”

However, despite this right to food, nearly 800 million people worldwide do not have enough to eat. That means one in nine people are suffering from hunger (UNFAO 2015). Hunger and malnutrition are the number one risk to health worldwide. Hunger is not just an issue for developing countries. Kirkpatrick and Tarasuk (2011), for example, report that food insecurity is not uncommon in North America where it affected 8 percent of Canadian households in 2007/2008 and 15 percent of US households in 2008<sup>1</sup>. Addressing global hunger is an incredibly urgent development challenge. However, it is not an easy challenge given the multifaceted nature of the causes of the problem. Contributing factors include, but are not limited to: poverty, natural disasters, conflict, poor agricultural infrastructure, lack of access to the marketplace, economic crises and volatile food prices, politics, and a person's socioeconomic status. One thing is clear though and that is that people are not hungry because of a shortage of global food supply. The world is producing more than enough food to feed every single person on this planet. The Food and Agricultural Organization (2011) estimate that recovering just half of the food that is lost or wasted could feed the world alone.

Therefore, addressing world hunger is not simply a challenge of increasing food production; it is also a challenge to reduce the amount of food produced that is wasted. Of course, reducing food waste does not automatically translate into less hungry people. Sometimes, it might result in just the opposite if, for example, people are relying on this discarded waste for their survival (Stuart 2009). However, "since the food supply has become a global phenomenon, and particularly where demand outstrips supply, putting food in the bin really is equivalent to taking it off the world market and out of the mouths of the starving" (Stuart 2009: 82).

One of the problems is that it is obviously not simply a matter of taking food waste and redistributing it to people that are hungry. Although there are initiatives underway to do just this (i.e., recover unwanted food from retail and redistribute it to food banks, see “Responses to Food Waste” section), these sorts of initiatives alone will not feed the nearly 800 million people worldwide that do not have enough to eat, most of whom are in developing countries and not in the industrialized countries where the food waste is produced.

This then leads us to the ethical issue, of responsibility for addressing food waste; should, and if so, to what extent, are humans obligated to change their consumption patterns in order to benefit others who are not as privileged as them? (Aiken & LaFollette 1996) Remembering that the right to food is recognized as a fundamental human right, this would suggest that there should be obligation somewhere.

Research repetitively shows that most people do feel guilty about wasting food (c.f. WasteMINZ 2014, where 89 percent of the people surveyed agreed that wasting food felt wrong to them). As food waste advocate Stuart (2009) suggests, rather than feeling guilty about wasting food, people should feel empowered by the sense of responsibility, knowing that by making small adjustments in their everyday food habits, they can play a part in helping to improve the lives of people who are currently hungry. Other food waste scholars are quick to point out though, that the issue of food waste cannot be conceptualized as a problem of individual consumer behavior and therefore that it is of no use to just blame consumers (Evans 2011). Such arguments are followed by suggestions that meaningful reductions in food waste will occur only when policies and interventions are targeted at the social and material conditions in which food is provisioned (Evans 2011).

## **Reducing Obesity**

Just as the inextricable links between public health concerns about hunger and food waste are clear, so too are the links between public health concerns about obesity and food waste. Global scale statistics highlight an apparent paradox—how can almost one billion people who do not have sufficient food be living on the same planet as over a billion people who are eating an excess of food? Whilst this massive imbalance remains, that is, some eating too much whilst others do not have enough, more detailed investigation identifies that it is not only how much is eaten, rather it is the particular foods that are eaten, which contributes to this paradox.

It may be seen as a contrast between obesity—too much food, and malnutrition—and too little food. Obesity is both a problem of too much food and too much of the wrong food. The modern industrial food system has created some products that contribute to the enjoyment of life whilst having limited contribution to human health. These are often processed convenience foods that have high levels of salt, sugar and fat—also known by the colloquial term as junk foods. Obesity and to a lesser extent malnutrition are exacerbated when individuals increase the amount of junk food eaten from being an occasional treat to being a regular staple component in their diet. The overconsumption of low value, processed junk foods that contribute to poor nutritional outcomes is particularly prevalent in low income and marginalized populations (Lang et al 2009).

Whilst the concept of special food for special events can lead to feasts where an excess of food that is ultimately wasted maybe used as a means to show power and wealth, the amount of food eaten is often in excess of the individual's requirements. Obesity caused by overconsumption of

food, and its associated prevalence of junk food, thus represents a waste of food. Smil (2004) explicitly includes over-nutrition—the gap between the energy value of consumed food per capita and the energy value of food needed per capita—in his definitions of food waste. Scholars Blair and Sobal (2006) have defined the term “luxus consumption” to mean food waste and overconsumption leading to storage of body fat, health problems, and excess resource utilization. They estimate that 18 percent of land and ocean hectares used to support the US diet is used to produce this luxus consumption.

### **Reducing Environmental Degradation**

To consider the ethical issues relating to reducing food waste, we must consider the relationship between human beings and the natural environment. To a large extent increases in food production have emerged from increases in agricultural productivity, which has been at the expense of the natural environment. Historically these “costs” have been viewed as externalities in that they have not been reflected in an appropriate increase in the price of food.

Food production in the modern era has a massive impact on the local environment. Its impact has progressively increased since the first move from a nomadic hunter gather lifestyle to fixed settlements, supported by what is now referred to as agriculture, around 10,000 years ago. This domestication of livestock and commencement of organized planting transforms local ecologies by encouraging a limited number of dominant and often new species. This has resulted in the reduction and even extinction of much native flora and fauna. This loss of biodiversity is of concern as it removes a gene bank that may include currently unexploited opportunities, and in that it has intrinsic worth and does not exist solely for human pleasure and taking.

The emergence of coordinated maintenance for protected areas, such as National Parks and wildlife corridors over the last 100 years, aims to maintain limited areas of native habitat whilst allowing production of food to continue. Thus there is a loss of native ecosystems for the land that is used to produce food that is wasted.

Most production of food, with the exception of that produced in domestic gardens, occurs in peri-urban and rural areas outside of cities. Thus food producers often referred to as farmers and the rural communities that support them play a critical role in the management of natural resources. From the perspective of maintaining and enhancing the natural environment it is desirable for these rural residents to be active stewards of the landscape in both coordinated and individual efforts.

In addition to the use of land, the food production systems that dominate around the globe are based on an industrial model. This requires significant external inputs of potentially scarce resources such as clean fresh water, agricultural chemicals, and energy. It is worth noting that some production systems, such as Certified Organic food, actively seek to reduce their use of these external inputs (see for example, Pearson, Henryks & Jones 2011). However, other than a pure renewable harvest of food from areas where production has occurred without input from humans, such as “wild” harvests from wilderness areas, all food production still requires external inputs to a greater or lesser extent.

The production of large amounts of food from the use of land and external inputs using the industrial model of agriculture tends to result some other outputs that have a negative impact on the natural environment. These include contamination of soil and waterways with agricultural

chemicals, and accumulation of other materials that are not recycled such as plastics. Collectively these may be seen as pollution.

There is concern that using industrial methods to produce meat has a number of negative consequences. The ethical issues associated with eating meat and those relating to animal welfare are discussed elsewhere. Whilst being an excellent source of nutrition, the economic efficiencies of “industrial” production of meat has resulted in it becoming relatively cheaper and hence more is consumed. When the meat production allows animals to forage for their food, animal welfare issues are reduced and in many cases this provides food from an otherwise unproductive landscape—such as sheep feeding of hilly landscapes that could not be used for cropping. However, when the livestock are confined and their nutrients are brought to them—such as intensive chicken or pig production—the use of external inputs per unit of production increases massively as does the environmental degradation.

And finally, there is concern with the increasing proportion of animal based protein in human diets, particularly when this is coming from high external input systems, which require harvesting crops that are then fed to animals which are then eaten by humans, because they are inherently inefficient. This is due to the loss of energy embedded in the food. For example, a human would derive significantly more energy, as measured in kilojoules or calories, if she or he ate the edible component of the crop, rather than that of the animal that has eaten the crop. Thus the waste of proteins derived from animals is of particular concern.

In summary, any food that is wasted squanders the resources used in its production. In terms of reducing environmental degradation, of particular concern are reducing greenhouse gas emissions,

mainly from energy used that is derived from fossil fuels, whilst also aiming to reduce use of clean fresh water. These environmental costs are present at every stage of the food chain – from production, processing, distribution and consumption. And these costs escalate; the higher up the food system the food waste occurs from farm to fork, the more detrimental the waste is to the environment.

In addition to the abovementioned negative environmental consequences of wasted food along the supply chain, the disposal of the food waste itself is also problematic. Food that is landfilled is generally compacted down and covered which removes the oxygen, causing it to break down in an anaerobic process. This rotting food produces methane, a greenhouse gas. Pound for pound, the comparative impact of methane on climate change is 25 times greater than carbon dioxide over a 100-year period (EPA 2015). The implications of landfilling food waste therefore, for global warming and climate change are severe. Some countries, including Taiwan and South Korea have already banned landfilling food. While reducing the volume of food waste generated at the source is preferable, if food waste is created, there are other less environmentally damaging ways of disposing of it, including feeding it to people, or to animals, or using it for industrial purposes. Composting eliminates many of the problems of landfilling food and in the process it recycles essential yet finite nutrients. Putting waste in digesters to produce energy in the form of a biogas is another option. However, while some disposal methods are obviously better for the environment than others, the fact remains that food that is not eaten has unnecessarily wasted the resources that have gone into growing, transporting, storing, selling, buying, and cooking the food and thus has caused much needless environmental degradation.

## **Responses to Food Waste**

As more of the global population seeks increasing convenience in their “income rich, time poor” lifestyles it is likely that some food will continue to be wasted. However, there are also interesting developments which are aiming to reduce food waste at various food waste hotspots along the food system. Downstream in the supply chain, initiatives are underway to cut crop waste. Crops that were previously left to rot in the fields, because bad weather, or market imperfections, or canceled supply contracts with buyers, are now instead being harvested by groups of gleaners—volunteers that collect excess fresh foods direct from the farmers’ field to donate to people in need. Scientists are working on advancing post-harvest technologies to control quality and extend the shelf-life of fresh products. The food processing and logistics industries are finding solutions for their waste with innovations that range from packaging and new storage technologies, through to finding ways to create value from byproducts. Food retailers are selling “ugly” fresh produce for cheaper, removing promotions that explicitly encourage overconsumption such as “two-for-one” deals and selling nearly expired food for cheaper. The food hospitality industry is experimenting with waste reduction initiatives such as downsizing meals, reducing menu options, providing doggy bags and charging diners extra that leave food on their plates. Food that is not able to be sold by retailers and caterers is increasingly being donated to food rescue organizations that divert unwanted food from supermarkets and catering organizations to help feed the hungry. If not donated to food rescue organizations, wasted food from the retail and hospitality sectors is often targeted by dumpster divers who eat food collected from waste bins. Further up the food supply chain, there are significant efforts contributing to reducing consumer food waste by providing information, education and inspiration for individuals in their private and professional lives. One of the high profile activities in this area is the Waste Resources Action Program, based in the UK, which works

with individuals, community groups and businesses to reduce food waste through its Love Food Hate Waste community engagement program (WRAP 2015).

## **Concluding Comments**

The waste of food in society is not a new phenomenon. Nor are efforts to reduce it. Citizens in countries on both sides of WWI and WWII were encouraged in government sponsored social marketing campaigns to be patriotic by not wasting food. Predating this in the 19<sup>th</sup> century, food waste prevention advice was plentiful in the household manuals and cookbooks of the time (Strasser 1999). However, over recent decades food waste is being (re)subject to scrutiny as the importance of both food security and environmental degradation are increasing on the national and international political agenda. In addition, recent investigations have highlighted the massive negative impact that the food system is having on the natural environment and that food waste is one area in which individuals are likely to make changes (Pearson, Friel & Lawrence 2014).

Although there may be some economic reasons, such as reducing costs, pursuing behaviors that aim to reduce food waste is essentially an ethical choice. It requires individuals and organizations to behave in ways that meet their own pleasures and aspirations whilst simultaneously minimizing the harm done to individuals, animals and the natural environment more generally.

This chapter has highlighted the fundamental ties between food waste, human health and the health of our planet. The scale of global food waste is shocking and this wasted food results in a number of ethically questionable implications. As the impacts of food insecurity, obesity and climate change really start to hit home, food waste looks set to become one of the major social justice, public health, and environmental issues of our time. The upside of the food waste reduction

challenge is that there is enormous scope for improvement by all players in the food system. There has been increasing amounts of noise about the food waste issue in recent years, which is a signal that major changes are on the way. A common thread in these food waste conversations that food waste is morally outrageous. As such, addressing food waste is likely to be an effective way to initiate some of the other more general pro-environmental/social behavior changes required in our food system if we are going to be able to ethically and sustainably feed the predicted nine billion people that will live on this planet by 2050.

### **Cross References**

Responsibility for Hunger in the Developed World

### **References**

Aiken, W. & LaFollette, H. (1996) *World Hunger and Morality*, Ed. 2. Upper Saddle River, NJ: Prentice Hall, Inc.

Blair, D., & Sobal, J. (2006) “Luxus Consumption: Wasting Food Resources Through Overeating,” *Agriculture and Human Values* 23(1): 63–74.

Environmental Protection Agency. (2015) *Overview of Greenhouse Gases, Methane Emissions*, viewed 17 July 2015, <<http://epa.gov/climatechange/ghgemissions/gases/ch4.html>>.

Evans, D. (2011) “Blaming the Consumer—Once Again: The Social and Material Contexts of Everyday Food Waste Practices in Some English Households,” *Critical Public Health* 21(4): 429–440.

FAO (Food and Agriculture Organization). (2011a) *Global Food Losses and Food Waste*, United Nations, Rome.

- Grayling, A. C. (2011) *What is Good?: The Search for the Best Way to Live*, Hachette UK.
- Hepting, D. H., Jaffe, J., & Maciag, T. (2014) “Operationalizing Ethics in Food Choice Decisions,” *Journal of agricultural and environmental ethics* 27(3): 453–469.
- IME (Institute of Mechanical Engineers). (2013) *Global Food Waste Not, Want Not*, viewed 17 July 2015, <[http://www.imeche.org/docs/default-source/news/Global\\_Food\\_WasteNot\\_Want\\_Not.pdf?sfvrsn=0](http://www.imeche.org/docs/default-source/news/Global_Food_WasteNot_Want_Not.pdf?sfvrsn=0)>.
- Johnston, J., Szabo, M., & Rodney, A. (2011) “Good Food, Good People: Understanding the Cultural Repertoire of Ethical Eating,” *Journal of Consumer Culture*, 11(3): 293–318.
- Kirkpatrick, S. I., & Tarasuk, V. (2011) “Housing Circumstances are Associated with Household Food Access Among Low-Income Urban Families,” *Journal of Urban Health* 88(2): 284–296.
- Lang, T., Barling, D., & Caraher, M. (2009) *Food Policy: Integrating Health, Environment and Society*. Oxford: Oxford University Press.
- Lien, M. E., & Anthony, R. (2007) “Ethics and the Politics of Food,” *Journal of Agricultural and Environmental Ethics* 20(5): 413–417.
- Paul, R. & Elder, L. (2006) *The Miniature Guide to Understanding the Foundations of Ethical Reasoning*, United States: Foundation for Critical Thinking Free Press.
- Pearson, D., Friel, S. & Lawrence, M. (2014) “Building Environmentally Sustainable Food Systems on Informed Citizen Choices: Evidence from Australia Biological Agriculture and Horticulture,” 30(3): 183–197.
- Pearson, D., Minehan, M. & Wakefield-Rann, R. (2013) “Food Waste in Australian Households: Why does it occur?,” *Locale: The Pacific Journal of Regional Food Studies* 3: 118–132.
- Pearson, D., Henryks, J. & Jones, H. (2011) “Organic Food: What we know (and do not know) About Consumers,” *Renewable Agriculture and Food Systems* 26 (2): 171–7.

- Smil, V. (2004) “Improving Efficiency and Reducing Waste in our Food System,” *Environmental Sciences* 1(1): 17–26.
- Strasser, S. (1999) *Waste and Want: A Social History of Trash*, New York: Metropolitan Book.
- UN (United Nations). (2015) *The Universal Declaration of Human Rights*, viewed 17 July 2015, <<http://www.un.org/en/documents/udhr/>>.
- UNFAO (United Nations Food and Agriculture Organization). (2015) *Food Security Statistics*, viewed 17 July 2015, <<http://www.fao.org/economic/ess/ess-fs/en/>>.
- WasteMINZ. (2015) *National Food Waste Prevention study: National Report. New Zealand*, viewed 17 July 2015, <<http://www.wasteminz.org.nz/pubs/national-food-waste-prevention-study-into-attitudes-towards-food-waste/>>.
- Williams, B. (2012) *Morality: An Introduction to Ethics*, Cambridge University Press.
- WRAP (Waste Resources Action Plan). (2015) *Save More Evaluation Report*, Banbury, UK.
- Zwart, H. (2000) “A Short History of Food Ethics,” *Journal of Agricultural and Environmental Ethics* 12(2), 113–126.

---

<sup>1</sup> Note that these data are not directly comparable due to differences in measures used to determine food security status.