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Discarding food vs. starving people – Inefficient and immoral?

Intensive discussions about discarding food in recent weeks were prompted by a study commissioned by the German Bundestag and supported by the German Federal Ministry of Nutrition, Agriculture, and Consumer Protection.¹ Spiegel online said on March 13, 2012: "Europe's waste would suffice twice to feed the world's hungry." This statement startled many people. Food is discarded in Europe and other prosperous countries while many people in poor countries are starving. Hence, it seems that the global hunger problem could be easily solved. People in rich countries would simply have to deal with food more responsibly.

This policy brief critically examines the methodology of identification food loss and the magnitude of estimated quantities and values. Furthermore, it is questioned whether the potential reduction of food loss on one side can really decrease hunger on the other. The paper concludes with a discussion of morals and alternative options for combating hunger.

Reduction of food waste is deemed a major issue by the Food and Agricultural Organization (FAO), the EU Commission, several governments, and numerous non-governmental organisations.² The German Federal Ministry of Nutrition, Agriculture, and Consumer Protection (BMELV) commissioned a study to quantify food wastes and requested proposals towards minimisation of such wastes.³ The study found, inter alia, "it is both ethically and socially unacceptable not to make use of food. This widens the gap even further between prosperity and poverty, affluence and malnutrition and industrialised and developing countries. Besides these social and ethical aspects, the costs to society and to the individual stakeholders should also be pointed out."⁴ This statement seems to have met with broad political approval and implicitly asserts a market failure.

It goes without saying that determination of the correlation between food wastage and hunger requires a definition of food waste.

"Food waste" denotes food residues produced along the producer-final consumer value-added chain.

"Food waste is distinguished into:

- avoidable food waste: still fully fit for human consumption at the time of discarding or would have been edible if it had been eaten in time
- partially (optional) avoidable food waste: generated because of different consumer habits (e.g., bread crusts, apple skins). This category also covers mixtures of avoidable and unavoidable waste (e.g., leftover food, canteen waste)
- unavoidable food waste: typically produced during meal preparation and disposed of. Mainly encompasses nonedible (e.g., bones, banana peels, or similar) and edible constituents (e.g., potato peels)."⁵

This broad term for food waste is also used in other studies and, of course, influences the magnitudes of the quantities and values determined.

¹ Stuttgart University Institute for Sanitary Engineering, Water Quality and Waste Management (2012): Determination of Discarded Food and Proposals for a Minimization of Food Wastage in Germany. Study commissioned by the German Bundestag. March 2012. This policy brief mainly refers to this study.

² See for selected recent references the end of the brief.

³ Ibid. ⁴ Ibid., p. 1. ⁵ Ibid., p. 4., Translation by the author.

Some implications of the definition of food waste shall be pointed out here before analyzing the issue in more detail.

- Avoidable waste, according to the above definition, is typical for seasonal production and consumption beyond the season. Losses typically occur during storage of potatoes and vegetables and even of cereals and, thus, by definition contribute to also food waste. Food waste could be minimised by importing vegetables and potatoes outside of our harvesting seasons. Import prices, though, would often be higher than domestic production and storage costs. Would such minimisation of food wastage really help starving people elsewhere? Would we enhance our well-being?
- Partially avoidable food wastes include, e.g., bread crusts and apple skins. Would it really help the hungry in other countries if people here changed their consumption habits, such as ceasing to eat apple skins? Is it reasonable to also include unavoidable waste, such as leftovers and canteen waste, in the aggregation of all food waste?

Food waste and inefficient resource utilisation

Relevant studies⁶ are implicitly based on the following assumption: food production consumes resources. Throwing food away means that parts of spent resources are not used, i.e., resources are squandered. Our prosperity could be higher if "wasted" resources were put to other uses. This argument implies a market failure. The argument leads to a fallacy.

Foods at different levels in the value-added chain are always combined products consisting of components of agricultural produce and complementary products and services. The latter include, *inter alia*, processing, storage at different levels of the value-added chain, sorting, classification, and transport, as well as purchasing and sales activities. Interrelations between the value and the quantity of agricultural produce in the final product "food" are partially substitutive and partially complementary. Low prices of complementary products and services prompt economical use of agricultural produce and vice versa. A favourable price of complementary products and services enables every level of the value-added chain to better adjust supplies to actual demands. The German study quoted above notes that avoidable waste is generated in households, *inter alia*, because shopping frequencies are allegedly not high enough. Occasionally, households allow products that were fresh when bought to become inedible or less palatable and put them to garbage.

The report suggests that more frequent shopping produces less waste. Higher-frequency shopping, however, entails increased relative shopping costs. All in all, more time would be spent, and travel expenses would rise. Lower-frequency shopping may result in resource savings but also increase

food waste. Would we really contribute to the prosperity of our society if we traveled more often by car to a remote supermarket? Can we not rely on consumers to correctly weigh up what is best for them?

Also, the retail sector produces waste, which could be minimised by more frequent shopping. Goods, however, are often delivered to retailers only once a day, explaining why avoidable waste may also be generated at this level of the value-added chain. According to the above definition, food waste will be occasionally produced where it is intended to ensure that goods (e.g., dairy products, fruit, vegetables, and bread) are available during the full opening hours, but sellable quantities cannot be safely forecasted. Customers are often not prepared to buy goods that are no longer fresh. Retailers could minimise the waste problem by having smaller batches of goods delivered several times a day. Additional deliveries would mean higher resources expenditures, which could impoverish society as a whole. Robinson Crusoe produced little or no food waste because he could collect and harvest his food every day. Obviously, that is impossible for societies which rely on intensive division of labour. Hence, it is misleading to assert that the food wastage rates established in the aforementioned study represent a complete squandering of resources.

Still, there is no doubt that food wastage occurs because market players at different marketing levels lack sufficient information and knowledge. This may be the case for households and professional kitchens that have not learned how to properly store, process and prepare food. The legislator also contributes considerably to waste rates by encouraging consumers to believe that a best-before date provides information about food digestibility. This is a case of policy failure.

Another correct observation mentioned in the study is that some harvest losses are avoidable. Such losses were lower, e.g., in the (dreadful) post-WWII years because poor and starving people headed to the fields to glean potatoes and collect ears of grain. Would it really be reasonable to avoid such losses by taking this type of action? Or would our society, thus, become poorer? It might be rational from an economic point of view to accept some food loss.

To sum up, we can conclude that the quantified volumes of so-called food waste exaggerate the quantities that would be produced, even given the most efficient utilisation of all available resources.

⁶ See for example the most recent studies by Buzby, Hyman (2012) and Gunders (2012) and the reference.

The aggregation problem: Aggregation of quantities

The quoted studies aggregate food wastes in two ways; one is in accordance to the studies, units of quantity (tons) in order to illustrate the significance of this problem.⁷ The aggregation of various goods is reasonable to answer different sets of questions. Economists often use market prices as a reasonable valuation standard. During WWII, agronomists developed a grain unit equivalent to calculate the productivity of arable land that enabled them to convert all agricultural products into potential grain production. This approach was reasonable in that grain was the most important product for human nutrition, and information was required about maximum grain production volumes. However, does it make sense to simply aggregate the weight of such diverse products as beef and vegetables? Certainly, wastage of relatively cheap food, such as vegetables and potatoes, is comparably higher than that of higher-quality products, such as beef. Is it reasonable to also record table leftovers as waste and include these into the overall figure in tons? Somebody who does not eat the fatty part of a very tasty rump steak – according to the study – will have contributed to increasing food waste. Would our society have become more prosperous had such fatty meat been eaten? Would producing less waste have helped us to curb global hunger? It is more likely that poor nutrition in rich countries would have increased health problems.

The aggregation problem: Aggregation of values

The study also indicates the value of food thrown away by households. The authors estimate food losses of individual products at consumer prices and aggregated them. The loss of food amounted to some Euros 940.00 per year for a four head household. This figure is meant to imply which good deeds we could do for the poor on our planet by treating food more carefully. Although this procedure may seem reasonable on the surface, it is highly questionable. As noted above, the price of food items at the consumer level is made up of the price of the raw agricultural product on the farm and the costs for processing, trading, storing, advertising, and so forth. For example, farmers in the US only receive Euros 0.07 for every dollar spent by consumers on cereals.⁸ Hence, to reduce the loss of cereals by \$US 1 would increase food availability on the farm level by \$US 0.07. The value of food loss based on farm prices would be much lower than that valued at consumer prices, and the difference is not lost food because it generated income for all the people providing these services and includes the remuneration for the resources used along the value chain; and, even more important it contributes to consumers' welfare. The latter value contains not only the price for food loss, but also the whole value of added services. It is misleading to assume that a

reduction of food losses could contribute as much to food security as indicated in this study and the many other studies. The estimate provided by the authors is not a conservative estimate but highly inflated.

Food wastage in rich countries and hunger in poor countries

The discussion of the importance of food wastes for starving people in other countries implicitly assumes that our unused food could be made available directly or indirectly to the hungry. Unfortunately, the study fails to discuss how restraint on one side may translate into increased consumption on the other. A reduction in the amount discarded by one side will not automatically lead to equivalent high consumption on the other. The poor are starving or suffer from malnutrition because they either do not produce food in sufficient quantity and quality or their purchasing power does not allow for food purchases. Reducing food discarding rates in rich countries will not modify, or hardly modify, these two roots cause of hunger. What could be expected at best is that food world market prices would be lower upon reduction of food wastage and would, thus, increase the purchasing power of the hungry in poor countries. Yet, we do not only throw away unprocessed agricultural products but also the added complementary products and services.

One ton less food waste cannot be equated with one ton more food for the hungry in poor countries. On the one hand, waste in rich countries is produced from other food than that required by the hungry. And on the other hand, our reduced wastes could not be transported free of charge to poor countries. Now, it could be argued that we, thus, free up resources that could be dedicated for production for the hungry in poor countries. However, as explained above, reducing food wastage decreases the division of labor and, thus, not necessarily frees up resources. It should also be borne in mind that a transfer of food may help the poor in times of crises but would impair the long-term incentive for higher production rates in such countries.

⁷ The UN Food and Agriculture Organisation (FAO) assumes that worldwide about one-third of food produced for human consumption is lost or discarded. This equates to a quantity of ca. 1.3 billion tons p.a. The FAO estimates that ca. 925 million people suffer from hunger and malnutrition. The quoted study by the University Stuttgart calculated that almost 11 million tons of food is disposed of every year by industry, retailers, bulk consumers, and private households (Ibid., p.1)

⁸ USDA, Economic Research Service, Price spreads from farm to consumers, 2012. Source: <http://www.ers.usda.gov/data-products/price-spreads-from-farm-to-consumer.aspx>

Discarding food and ethics

The reference in most studies to ethical aspects seems convincing at first glance. We, the rich, throw away food while other people are starving. Is this behavior morally acceptable? Indeed, many people in rich countries may feel uneasy with the knowledge that many of their contemporaries cannot even satisfy their most basic needs. Helping poor people is one central trait in Christian ethics and other religions. Hence, discarding edible food understandably is a moral problem for many people. This problem could be mitigated, e.g., through improved legislation (best-before date) and enhancing consumer information and knowledge. The extent of the problem and its significance for the poor in developing countries, however, has been grossly overestimated in the above-mentioned studies.

Availability of more efficient solutions

Is our society not characterized by a large number of phenomena that should give rise to more severe moral compunctions? Shoes and clothes are often not worn any longer, although still fit for their purpose because we want to be dressed better and in the latest fashion. We are squandering resources, despite the fact that many people on earth cannot satisfy their most basic needs. Much money is spent on jewelry, while many people in other countries suffer from hunger and malnutrition. Vast amounts of money are expended on intricate packaging and costly advertising and, thus, consume resources whose added value for our society is questionable. Is it not also immoral for the Federal Republic of Germany to fail to pay internationally agreed development aid for years?⁹ Is it not also immoral for the German federal government to pay high incentives to encourage inefficient biogas production and, thus, reduce world food production? It would be a commendable task to review political directives and economic actions with a view to moral and global hunger.

⁹ The Federal Republic of Germany, acc. to the Organisation for Economic Cooperation and Development (OECD), in 2010 made available a mere 0.4 per cent of its economic output to aid poor countries. Germany, together with other countries, had actually committed itself to spend at least 0.51 per cent of its gross domestic product (GDP) on development aid. Source: <http://www.spiegel.de/politik/ausland/entwicklungshilfe-deutschland-haelt-zusagen-nicht-ein-a-688971.html>

Further information

The findings are documented in detail in the following publications

Buzby, J. C., Hyman, J. (2012): Total and per capita value of food loss in the United States. *Food Policy*, 37, 561–570.

European Commission (DG ENV): Directorate C – Industry, 2010, Preparatory Study on Food Waste across EU 27, Executive Summary.

European Commission (2011): Roadmap to a Resource Efficient Europe. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. 2011. COM(2011) 571.

FAO (2011): Food Losses and Food Waste, Extent, Causes and Prevention. Study conducted for the International Congress SAVE FOOD! at Interpac. Düsseldorf, Germany.

Gunders, D. (2012): Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill. *Natural Resources Defence Council*, Issue PAPER.

Parfitt, J., Barthel, M., Macnaughton, S. (2010): Food waste within food supply chains: Quantification and potential for change to 2050. *Phil. Trans. R. Soc. B*, 27 September 2010, Vol. 365 no. 1554, S. 3065–3081.

Second Harvest Food Bank of Wisconsin (2008): Case Study, Food Waste Prevention and Food Rescue.

University Stuttgart Institute for Sanitary Engineering, Water Quality and Solid Waste Management (2012): Determination of Discarded Food and Proposals for a Minimization of Food Wastage in Germany.

WRAP (2008): Material Change for a Better Environment, The food we waste. Food Waste Report v2.

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