Case Study: How is Nesso Italian Kitchen Reducing its Eco-Footprint?

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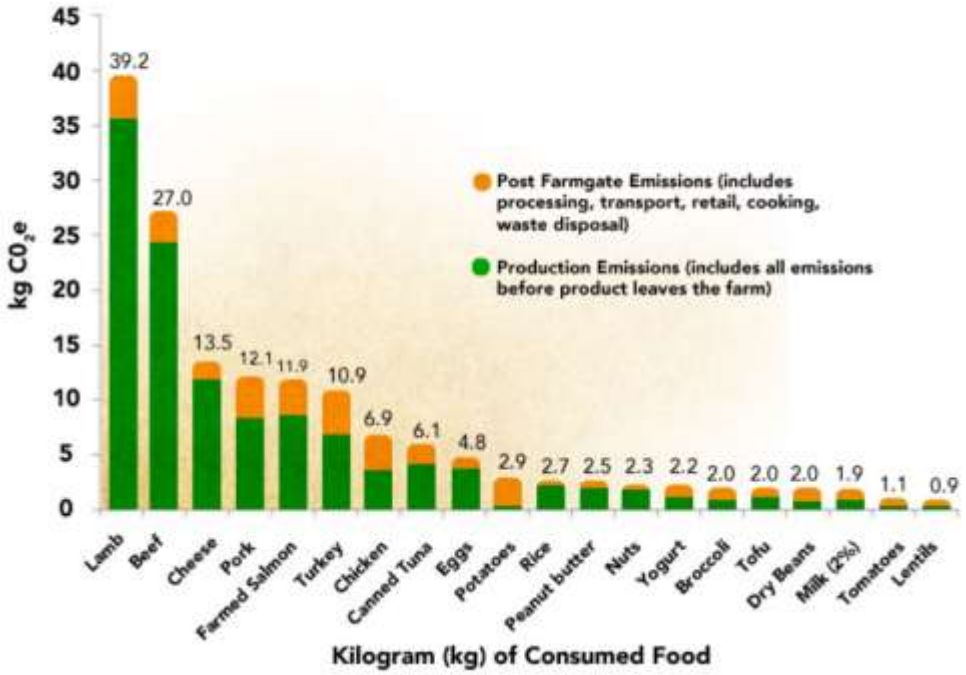
Like any restaurant in any city, Nesso Italian Kitchen (339 S Delaware St) is a part of a system—a system of food distribution, consumption, and expulsion that reaches not only across the entire nation but the entire world at large. All the parts in this system work in conjunction to control the flow of food, fresh and frozen, to as many people as need it to ensure as little goes to waste as possible, but obviously not all variables can be accounted for. Much of the food that goes through the international system of food supply chains ends up going to waste, and as of this year that amount has constituted around 1.3B tons of waste.[1] Waste, in this system, is defined as "the edible amount of food, postharvest, that is available for human consumption but is not consumed for any reason" by the USDA,[4] meaning both food that is thrown away by consumers and food that is thrown away by staff, in terms of a restaurant. Why is this food waste dangerous?

Firstly, food waste itself presents a significant environmental hazard in terms of physical space, clogging up landfills due to its inability to be recycled. This can seep into groundwater and contribute to carbon emissions by rotting in the open air and going uneaten, which is a significant biohazard as well as being a disruption of supply chains. Inefficiency in supply chains initiated by large-scale food waste can lead suppliers to drive prices up or constrict the flow of fresh food to processing facilities, warehouses, or restaurants,[2] which presents a large issue for restaurants down the line by making fresher food more difficult to access. This is where the second (and more prescient within the scope of this writing) issue arises, in the significant environmental dangers of meat processing and packing for long-distance shipping and handling. Refer to the image below:[3]

Figure 1. Full Lifecycle Greenhouse Gas Emissions from Common Proteins and Vegetables



According to these statistics gathered in 2011 by the Environmental Working Group, carbon dioxide emissions from processing and transporting fresh food to stores and restaurants are not exactly harmless, with nearly 40kg of the gas pumped into the environment per 1kg of food for the worst offending and most difficult to transport foods. This is created when fresh ingredients are pumped with steroids and preservatives to keep them sterile and clean on long journeys to faraway places that might need them, burning large amounts of dangerous fuel and seeping industrial quantities of solvents and pesticides into the environment while doing so. As you can see, meats and proteins are significantly more deleterious to process than vegetables, fruits, and grains; this is clearly a problem being that protein is the cornerstone of the human diet and is required in large quantities by every store and restaurant in the world, leading to a compounding problem for transportation and processing chains[2] who lack access to greener technology for scrubbing carbon dioxide emissions from their plants. Carbon dioxide is, after all, one of the most dangerous greenhouse gases to pump into the environment because of its tendency to trap heat and clog the lungs of animals in the troposphere of the Earth.

So, a question, or perhaps a series of questions, arises for the front end of the food supply chain where the most waste tends to occur:[2] how can we, as restaurant workers, reduce the amount of waste and emissions we produce? Logically, the solution would be to rely only on fresher ingredients[5] only to eliminate the need for packing preservatives and large meat-processing plants, but realistically this is simply not an option. This writing focuses on Nesso Italian Kitchen, a restaurant located in central Indiana that seeks to provide top-of-the-line Italian fare, meaning a lot of seafood and lavish proteins (as well as a lot of pasta, but that is very easy and nearly harmless in comparison to meat.) Things like swordfish, Iberico pork, U10 scallops, or Halibut are plainly not available in the landlocked city of Indianapolis, so to meet the needs of our clientele there is simply no way to use immediately fresh ingredients. Instead, our efforts towards reducing food waste, then, have been more focused on importing or transporting meats and seafood that are not pre-prepared and preparing them from scratch ourselves to minimize the amount we rely on industrial chemicals—that means more work for us in exchange for reducing our footprint. As a specific example of our commitment to this concept (and, by extension, my own personal involvement with reducing carbon emissions from the meat industry,) take the following images below, photographed personally by the author of this paper:

A fresh octopus prior to preparation. To the right (handling the octopus) is executive chef and manager Jessie Woolley, who typically makes and receives deliveries of fresh food for the restaurant.

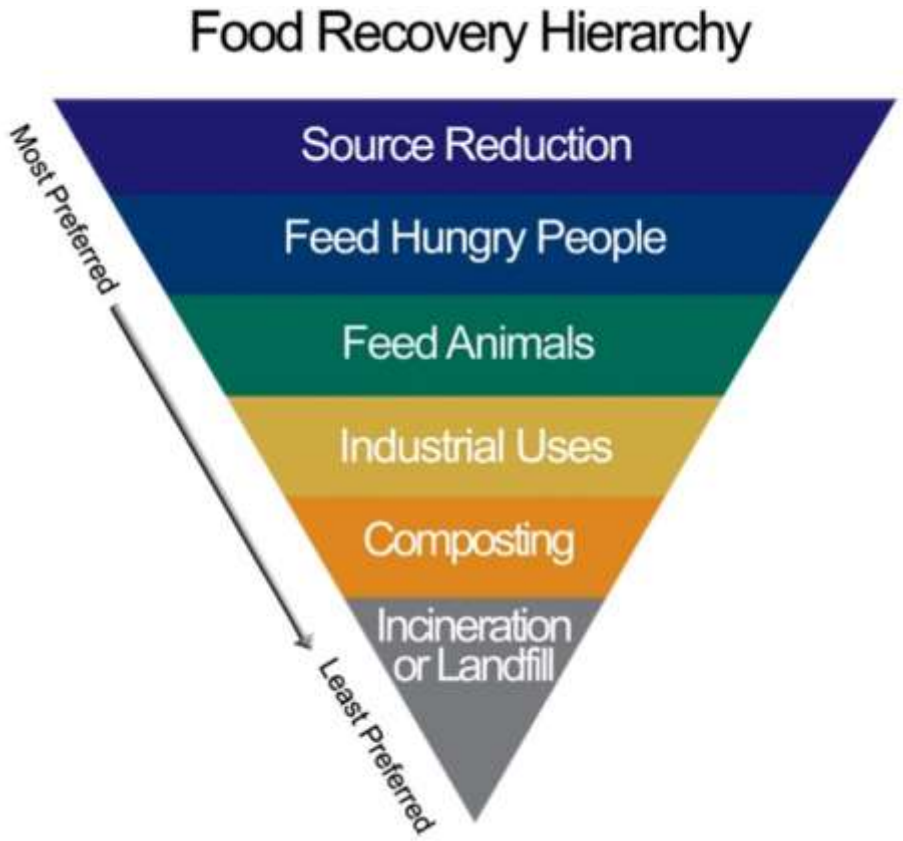
An octopus immediately prior to preparation on a cutting board, gloves donned for sanitation and plastic wrap to cover any excess meat. Notice the first incision begins at the “face,” to remove the biodegradable but inedible beak.

An octopus during preparation, beak removed. Preparation includes the removal of the beak and eyes and the separation of the head from the tentacles, and subsequent separation of the tentacles prior to marination.

In the above images, you can see an octopus being singled out for preparation at Nesso during the pre-service preparation period. These octopi were previously not a facet of our restaurant, despite the fact that they go not only into our octopus antipasto but also our popular (among our typical clientele) squid-ink pasta. In the days following our opening two years ago, and also our reopening last October following the SARS-CoV-2 lockdown, our octopus was purchased wholesale and premade, packed full of preservatives and chemicals to keep the marinades and spices it was packed with pristine and keep the already cut and cooked meat from spoiling. Not only was this expensive, it was a huge contributor to our personal contributions to emissions by

buying non-eco-friendly meat and then shipping it from far away—New York, to be precise. Now, however, we get our octopus not prepared at all; it's simply drained and packed in ice and sent to us in a box, which is no more damaging to the environment than getting it straight from a butcher shop, minus the unavoidable cost of having it shipped from far away. This is significant because it tastes much fresher, obviously, but also because it doesn't give us a load of chemicals to clean off and drain, pumping them into sewers and landfills, and also because it doesn't give us as much room to receive unusable meat which will be immediately wasted. This goes double for our red meats as well, with our tenderloins (that we also cut and marinate ourselves) and our authentic Iberico pork being imported all the way from Spain but not packed with any inert chemicals since we prepare all the proverbial "fix-ins" ourselves.

These may seem like insignificant details being that we still import a lot of our meat from far away—shrimp and pork from overseas and octopi from New York are not cutting back on transportation emissions. However, these do cut back hugely on food waste. Buying fresher ingredients and preparing more in-house than we used to has allowed us to buy less premade or pre-prepared food to sell which, as I intimated, gives us significantly less spoiled food prior to service, and that adds up. Additionally, less added chemicals and preservatives in our food makes it far more easily biodegradable should any of it be wasted, which, while unfortunate, does help to mitigate the problems associated with food waste in general. It's no perfect solution, and we still have no choice when it comes to seafood, but our eco-footprint is significantly lower than it used to be due to our decreased reliance on preserved, frozen food.[5] As the USDA has included in their own guide on food waste as a whole,[4] landfill waste of food is the worst and "least preferred" method for dispatching wasted food, so anything we can do to increase the biodegradability of whatever food waste we must have is a big difference, on top of simply reducing waste as a whole in accordance with their hierarchy of food waste reduction (included immediately below:)



This infographic from the USDA website illustrates the pyramid of how significant multiple different kinds of food waste reduction are compared to each other, with the size of the layer being proportional to the importance of the method.

It's difficult work, giving ourselves more preparation work to do in order to keep food fresher simply to reduce emissions and food waste. Still though, it's undeniable that the current attitude toward fresh food does result in superior taste, which is a very welcome side-effect of food waste reduction, which is by proxy a way to reduce emissions and environmental damage. This makes us that much stronger a link in the chain of Indianapolis food supply as we take in higher-quality products and produce less waste thus becoming a facilitator of high-quality food distribution throughout the whole city by increasing demand[2]. I personally find this rewarding, as someone who not only takes direct part in preparing this food but also as someone who has urged management to pay more attention to fresher ingredients (myself among others, including Chef Woolley who did not walk on as a manager, mind you,) which has clearly

paid off. To conclude, I can safely say that by the USDA definition of food waste provided above,[4] and the guidelines set by the NRDC,[5] Nesso Italian Kitchen has successfully reduced its eco-footprint by a non-insignificant margin in the last year, and only continues to reduce its contributions to local and statewide food waste output by dedicating itself to purveying and utilizing cleaner and fresher proteins. This is, to me, the most significant contribution I have made in my life to sustainable food waste reduction efforts, in that the purveying of fresher ingredients has proven to indeed be cheaper due to the lack of reliance on preservatives so that we, and everyone else in the city, can afford to wholesale buy more and more cleaner food in the future. Sustainability, then, means to me that not only can we find a short-term solution to problems with local emission or waste issues, but that we can find an easy and affordable solution for the future so that we can expand efforts to reduce emissions and waste via the same methods and inspire others—by example or by simply driving out the lower-quality distributors—to follow in our footsteps, setting off a wave of large-scale eco-friendly food supply chains across the state.

ANNOTATED INDEX OF WORKS CITED*

1. Ali, Abdelrahman, et al. “Analysis of Determinants to Mitigate Food Losses and Waste in the Developing Countries: Empirical Evidence from Egypt.” Mitigation & Adaptation Strategies for Global Change, vol. 26, no. 6, Aug. 2021, pp. 1–26. doi:10.1007/s11027-021-09959-0.
    a. This journal was joint-written by researchers from Pakistan and Egypt, as well as from China, with various agricultural economic programs from their respective universities with the intention of condensing data on food waste from Egypt. In addition to providing empirical evidence about Egypt specifically, many stats are included and mentioned right out of the gate regarding global food waste statistics (as of this year) that include the United States. I believe reputable global statistics as well as specific statistics from other countries put into perspective how serious food waste is for the entire planet and not just for my specific case; 1.3B tons of wasted food worldwide gives a sense of agency to any small actions I could personally make in my own area in the hopes that many small actions could begin to make a dent in an enormous problem.
2. Batista, Luciano, et al. “Improving the Sustainability of Food Supply Chains through Circular Economy Practices – a Qualitative Mapping Approach.” Management of Environmental Quality: An International Journal, vol. 32, no. 4, July 2021, pp. 752–767. doi:10.1108/MEQ-09-2020-0211.
    a. This journal comes from a series of British business management experts writing on behalf of restaurant and food supply managers to optimize chains of supply, and avoid food waste before use. This highlights the massive problem of food waste before preparation and the terribly inefficient methods by which food is cultivated, prepared for distribution, and processed after use or waste—the things whose minimization is what I seek through my own project. By personally focusing less on pre-made food and buying fresher, and efficiently processing unavoidable waste, my own restaurant can become a stronger link in a chain of food distribution and consumption on a city, state, or national level.

3. “Climate and Environmental Impacts.” *The Impacts - 2011 Meat Eaters Guide | Meat Eater's Guide to Climate Change Health | Environmental Working Group*, Environmental Working Group, 2011, www.ewg.org/meateatersguide/a-meat-eaters-guide-to-climate-change-health-what-you-eat-matters/climate-and-environmental-impacts/.
    a. The EWG is a long-standing NGO since 1993 that organizes protests, strikes, and lawsuits against legislative bodies and conglomerate committees in order to bring attention to abuses of natural resources, particular qua air and water pollution more than anything else. Their stake in the meat-packing and distribution industry has been vetted, and while the provided statistics are slightly outdated, one can only assume that as trends in global exploitation have increased (as I observed and cited in my previous essay on overpopulation) that emissions from the industry have only continued to increase. Regardless of extrapolating statistics, the provided data proves that besides food waste being a very widespread issue, it is also a very old one, with meat being an enormous contributor to global CFC and CO2 emissions even 10 years ago and that wasting meat after the damage has been done to mobilize it is a much larger threat than wasting vegetables due to the way meat is cooked and prepared. This makes my personal work more important, as most of the changes the management has made at my restaurant pertain to fresher proteins, especially red meat and seafood.
4. “Food Waste FAQs.” USDA, United States Department of Agriculture, 2021, www.usda.gov/foodwaste/faqs.
    a. This simple questionnaire from the USDA outlines some of the statistical problems associated with food waste specifically in the US. It includes numbers on how much food is wasted and who the largest contributors to food waste are, as well as some personal, preventative measures that readers can take, but most importantly it provides a definition for food waste: “the edible amount of food, postharvest, that is available for human consumption but is not consumed for any reason.” This definition and the

statistics it warrants are beneficial to me because specific numbers about food waste closer to home, and closer to where I intend to be trying to make a difference, provide me with some more relevant goals. Worldwide food waste is a huge threat but one that I can't make a dent in alone, but US food waste is something I could potentially set a precedent for fixing if I start with my own place of employment. Call it encouragement, if you like, and the detailed definition of food waste will be one that I personally adopt for my own analysis of this project.

5. Hoover, Darby, and Madeline Keating. "Food Waste Restaurant Challenge Guide." *NRDC*, Natural Resources Defense Council, 25 Mar. 2020, www.nrdc.org/resources/food-waste-restaurant-challenge-guide.
    a. This guide provides a series of specific "challenges" from the Natural Resources Defense Council, a legal NGO that contends with energy companies and the EPA to alter environmental legislation, most notably in the 1973 case against the EPA that forced the government to reduce the lead content of gasoline. The "challenges" themselves consist of a list of talking points to be discussed with food management and their suppliers regarding the reduction of food waste, up to and including hotels and governmental offices. These points provide an outline for how food waste ought to be measured and how improvements are to be calculated in terms of metrics, providing specific methods for reducing food waste and considerations for timelines or sponsored audits to ensure cross-checked and optimized food waste management. Of course, while these points are intended as a sort of event involving direct contact with the NGO itself, due to time constraints I will personally be taking their points into consideration when measuring my own restaurant's attitude toward and treatment of food waste, and measuring not only their improvements since our reopening last October but my own personal impacts (or potential impacts) within the confines of their specified methods. These points serve to me, then, as a way to measure success.

*References are listed alphabetically, not necessarily in the order they are cited.