

Food Scraps Drop-off Pilot

Literature Review

For: Professor Robinson

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Root Causes:

In the 1950s the United States created the so-called sanitary landfill as a way of dealing with the problem of waste management (Taras, 2020). These massive spaces designated for trash were made without regard for the environment or people living in the vicinity. Only as the effects were felt (odors, negative health consequences, and problems with contamination) was this method questioned. Now the EPA regulates waste under the Resource Conservation and Recovery Act (RCRA) (EPA, n.d). However, society must move away from using this method as it remains an unsustainable practice.

As landfills became more sophisticated, there were regulations to dictate how a modern landfill should operate. Tarps are used as protection against the elements, in addition, active and passive collection wells are used to gather Landfill gasses (LFGs) (CDC, 2001). These LFGs are captured and can be used as a source of renewable energy (EPA, n.d). In supervising the waste in a controlled environment this has diminished the risk of groundwater contamination from landfill leachate (EPA, n.d). However, landfills are not a sustainable option for waste management as they still cause much harm to the environment and contribute to climate change. Greenhouse gases (GHGs) including methane (CH₄) and carbon dioxide (CO₂) are produced as the trash decomposes in the landfills. According to the EPA, Municipal solid waste (MSW) landfills accounted for almost 15 percent of total methane emissions in 2021, third only behind enteric fermentation and natural gas/petroleum systems (EPA, n.d).

There is considerable money being made in the waste industry, making it profitable to keep business as usual. There is a tipping fee which is the cost associated with the quantity of waste being dumped at the MSW landfill. This fee has increased over the last few years, the

average tipping fee in 2021 was between fifty and sixty dollars per ton (Alves, 2023). According to the EPA “more food reaches landfills than any other single material in our everyday trash, constituting 24 percent of municipal solid waste” (FDA, 2023). Thus, landfills profit greatly from this household food waste. It is estimated that almost 35% of all waste is food waste and yard trimmings which could be easily composted, lessening the strain on the environment (Environment America, 2021). The Centre County Recycling and Refuse Authority states that every month the average single-family household discards of around 45 pounds of food scraps and food-soiled paper (State College, 2015). However, there is great resistance from these MSW landfills to investigate other alternatives for dealing with waste. Currently, they do not have incentives to invest in other infrastructures or move towards sustainable practices.

The US is a consumption-based society without much of a circular economy (Ryen et al., 2022). Things are produced to be thrown away or broken because there is profit in this cycle. There are no real regulations in place to hinder producers from continuing to participate in this unsustainable practice. However, in section two of the Save Our Seas 2.0 Act (Public Law 116-224), it is stated that by 2025 at least fifty percent of all non-hazardous solid waste must be diverted from landfills (The White House, 2021). This is a major source of the problem. Regarding the agriculture industry, there is so much food that is being wasted. Either from bad crops, food left behind on the field because of a lack of laborers, grocery stores miscalculating the needed quantities, or consumers not handling their food correctly. Whatever the reason may be, it all ends up as food waste and if it is not composted or turned into biogas, there is an increased likelihood of the waste contributing to overall emissions by ending up in landfills. To that, many grocery stores and farmers rather let their food items rot, than donate the food before

it gets spoiled. It is selfish practices like this that cause over 100 billion tons of food to be wasted (Feeding America, n.d).

Studies find that the acts of food waste reduction and recovery are often done on a voluntary basis. Ryen et al find that the lack of nationwide policy within the bioeconomy causes states to take it upon themselves to self-organize and try to adopt new policies (Ryen et al., 2022). These are monetary costs however, the cost of the environment cannot be calculated in such simple terms. “Ignoring such costs may underprice landfills, which in turn may inhibit the development of other waste management options, such as waste reduction, recycling, and resource recovery” (Hirshfeld et al., p. 471,1992). Therefore, the real cost to society and the environment often remains unknown and is difficult to measure.

Existing and Attempted Policy Measures:

State College Borough (SCB) began collecting green waste in 2008, the curbside collection pilot began in 2010 and they introduced a permanent curbside organic collections program that has been in operation since 2013. The program was expanded to include a variety of businesses and schools, as well as more curbside pickup locations in the borough. Based on data collected from 2013 to 2017 it was estimated that COG’s residential program (16,000 households) disposed of 11,410 tons of waste per year ending up in the landfill (COG, 2019). Thus, in 2019 a regional organics program was proposed for these households in Benner, College, Ferguson, Harris, and Patton Townships. This was modeled after SCB’s curbside collection which reduced 18% of SCB’s waste by diverting organics away from the landfill (COG, 2019). This promising data was used by Centre County Recycling and Refuse Authority (CCRRA) to inform the next steps regarding its own organics collection program.

The curbside collection of household food scraps and yard waste was intended to reduce GHG emissions by turning the collected materials into compost. The problem was that the collection process involving vehicles powered by fossil fuels would have practically negated these sustainable efforts. It was estimated that the trucks collecting the organics from households would drive 2,300 miles per week within the COG service area (COG, 2019). Therefore, the Public Services and Environmental Committee concluded that the cost associated with the proposed curbside organics collection program was not worth the minuscule reduction in carbon emissions (COG, 2019). Looking at the results shown in the ‘Cost-Benefit Analysis for Proposed Regional Organics Program’ PDF, it was estimated that an increase of 585 metric tons of GHG emissions would stem from a curbside collection for the COG service area (COG, 2019).

The Centre Region Climate Action and Adaptation Plan (CAAP) was adopted in late 2022. The comprehensive plan includes many aspects of how the local government can fight against the effects of climate change (CRPA, p. 28, 2021). This includes local emission reduction goals which CCRRA is supporting by finding a solution for household organic waste. Centre Region Waste Stream also has the goal of diverting 10% of organic waste from landfills by 2030 (CRPA, p. 78, 2021). Based on the long-standing success of SCB’s organics collection program, coupled with other factors including the pressing local emission reduction goals and the intensified desires of Centre County residents to have such a program in their community, Centre County investigated their possibilities again.

Numerous ideas were suggested by the CCRRA and the Centre Region Council of Governments (CRCOG) for the wider community. The curbside pickup was discussed once more this time with the idea of using split-load compactor trucks, which was rejected for logistical and

cost reasons. Furthermore, it was not possible for the Department of Environmental Protection (DEP) to permit such a curbside pickup because there were too many concerns about contamination when collecting organic waste with other household waste (*Word doc., n.d). Therefore, the CCRRA decided to pilot the 2023 food scraps drop-off in order to tackle the community's food waste diversion. This was found to be a better option as participants dropped off their organics scraps themselves at one of the five locations. There have been over 645 partakers of the pilot, testing the feasibility of such a program in the long term.

Gaps:

There is a gap that needs to be filled in society in order to overcome food justice issues. A multifaceted approach must be taken involving grocery stores, non-profit organizations, and the federal and or local government. This will ensure the protection of those most vulnerable in society, as well as the environment. Grocery stores must be incentivized with whatever is necessary to ensure that the food that is about to expire gets donated, composted, or turned into biogas. France's Anti-Waste Law, specifically the "Garot Law" was introduced in 2016, which "introduced the ban on the destruction of edible unsold food product" (Ellen Macarthur Foundation, 2021). The French government is providing grocery stores with tax breaks for the food that they are donating (Saltzman et al., 2019). There are of course abusers of this law, who see the opportunity to profit from this without delivering (Saltzman et al., 2019). Nonetheless, the French government sees the enormous benefits of this initiative. France has set the goal of reducing food waste by 50% by 2025 (Saltzman et al., 2019). Other countries have been reluctant to follow because of the huge undertaking, plus countries like the US often lack the infrastructure and there are many egos involved. A circular economy threatens many industries and goes

against many of the freedoms that are ingrained in American society (The American Dream).

This disruption is in violation of what many people believe to be their innate rights and all for the sake of meeting emissions reduction goals that many do not even see the advantage of.

At the federal government level, there needs to be a reconfiguration of food labels such as sell-by dates and expiration dates. Sell-by dates do not imply that the food cannot be consumed after the date that is stamped on the package, but rather that the article cannot be sold legally (Walia et al., 2017). Policies are expected “to both directly and indirectly influence wasted food generation and management, including highly variable requirements for food date labeling and using excess food as animal feed” (Ryen et al., 2022). While waiting for these policies to be created, Centre County could help in narrowing the gap by re-educating citizens about the meaning of these different labels. This can ensure the product's prolonged lifetime. Additionally, consumers can be taught the importance of practicing conscious shopping habits. Preservation techniques like fermentation or pickling classes could also address these issues of food waste at a local scale.

There is an opportunity for the local government to fill the emissions gap in accordance with the Centre Region Climate Action and Adaptation Plan’s (CAAP) emission goals. Specifically, to improve efficiencies of waste management by reducing the number of miles spent on collection as well as addressing the social equality aspect of food security (CRPA, p.25&80, 2021). Therefore, the food scraps drop-off pilot project explicitly addresses these issues of diverting household food waste from landfills to be composted. In addition, the five drop-off sites ensure less emissions as opposed to the organics curbside pickup. Opportunities are here to find ways of reducing the emissions cost of collection even further. The hope would

be that participants would combine their food scraps drop-off with other activities and errands. In creating a permanent project, this must be one of the top priorities, otherwise, it loses much of its impact. Other ideas such as the combination of farmers markets and food scrap collection sites would be in alignment with the CAAP (CRPA, p. 81, 2021).

Diverting food waste from MSW landfills causes a great loss for operators of landfills. However, it creates an opportunity for COG to meet its waste reduction and zero-emissions goals, in addition to providing the community with a much-needed and wanted service (composting). It is only through such disruption that we can move towards a circular and sustainable economy that includes all members of society.

Without reducing the amount of waste that ends up in MSW landfills there will continue to be too many GHGs seeping into the atmosphere. These must be diminished at all costs to meet the goals of the UN and local goals of waste reduction and zero-emissions goals. Many barriers keep residents from doing their composting, such as not having a backyard, as well as the costs associated with at-home composting. Thus, on a social scale providing more people in the community with the opportunity to engage in composting will reduce inequalities. All of these issues are being addressed in the Centre County Food Scraps Collection Pilot Project as there are five locations where participants can bring their organic household waste, free of charge. It will be my job to assess the success of this project based on feedback from the community, as well as from community partners and stakeholders. Only then can we fully assess how to continue. Living in Europe gives me insights into how food waste is dealt with here. Therefore, I hope to be able to give a unique perspective on the topic.

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