5-2016

The Political Economy of Wasted Food Policies in the United States and European Union: A Multi-Scale Analysis

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Spring 2016

A Master's Research Paper

Submitted to the faculty of Clark University, Worcester, Massachusetts, in partial fulfillment of the requirements for the degree of Master's of Science in the department of Environmental Science and Policy

And Accepted on the recommendation of

Ken MacLean, Chief Instructor

Abstract

Between 33 and 40 percent of food produced is wasted while one quarter of the population of the United States and the European Union is food insecure (Gunders, 2012, p. 4). How is this problem addressed through policy in the United States and the European Union? Although there are non-governmental organizations working to redistribute food and educate consumers, a more comprehensive policy-based approach is needed to fully address this problem. Several cities and states in both the U.S. and E.U. have adopted policies before they were nationally or internationally implemented. These early adopter cases were examined here to determine best practices and found there is enough of an early majority to influence broader policy development. This paper also investigated if there are similarities or differences in the way that municipalities, states/countries, and overarching national/international governments approach the problem of wasted food with policies. This was examined through the lens of political economy in the context of food supply chains and labor. This lens explores the relationship actors in the supply chain have towards each other as producers, wholesalers, and retailers, the consumers, the environment, and how these relationships perpetuate wasted food. By using this lens, it is possible to move beyond the simplified explanation of overconsumption as the main cause of wasted food.

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Table of Contents

Introduction

Between 33 and 40 percent of food produced across the globe is wasted is wasted while one quarter of the population of the United States and the European Union is food insecure (Gunders, 2012, p.4). Policy intervention can be better utilized to address this issue. Although there are non-governmental organizations working to redistribute food and educate consumers, a more comprehensive policy approach is needed to fully curb this problem. Several cities and states in both the U.S. and E.U. have adopted policies before they were nationally or internationally implemented. Case studies at each scale will be laid out in detail, then an analysis will follow demonstrating the strengths and weaknesses of each case. The characteristics of early adopters will then be explored, which includes their motivations and best practices. Next, the overarching context of the political economy of food will be examined to bring to light the deeper structural causes of wasted food. Finally, recommendations and overall conclusions will be drawn and next steps will be outlined.

Food waste is defined by the Food and Agricultural Organization of the United Nations as; a large proportion of bio-waste, food waste is composed of raw or cooked food materials and includes food materials discarded at anytime between farm and fork; in households relating to food waste generated before, during or after food preparation, and spoiled or excess ingredients or prepared food (FAO, 2011, p.1). Food waste can be both edible and inedible. This is separate from food losses, which is the result of unintentional events, whereas food waste occurs more through conscious action or negligence. Food waste is therefore a component of food loss and ensues when an edible item goes unconsumed, such as food discarded by retailers due to undesirable color or blemishes and plate waste discarded by consumers (Buzby et al., 2014).

Wasted food also transpires because of local-global relations and the bargaining power of global retail chains. Once money can no longer be extracted from branded products in retail stores, it is seen as waste, which is a contentious issue. A large portion of waste happens at the consumer level because of the responsibility that is passed onto the consumer from the formation of food supply chains. For example, food waste can arise because of the large portion size provided to consumers from the food industry, especially if the food spoils quickly after the packaging has been opened (Alexander et al., 2013). The concept of political economy in the context of wasted food equates cheap wages with cheap food due to the nature of labor valuation in the capitalist market. Essentially, low pay to migrant workers who harvest the majority of both the U.S. and E.U. food supply, subsidies, cheap water and fertilizers allows food prices to remain low except in certain cases (usually when there is climate disruption). This ignores the environmental externalities of large industrial agriculture and the subsidies that this type of agriculture receives to keep it competitive and dominant in the global market. This type of market therefore produces a mistaken conclusion that organic food or food produced by small farmers is more expensive than industrially-produced food, when it is actually reflective of the true value of the processes that combined to bring that food to the market. This means that food processors and retail operations can throw away food if it does not meet their high standards and will not feel a significant financial impact. Consumers also throw away food when they forget about it due to the increasingly busy nature of citizens' lives and the convenience of takeout food.

Background

Along food supply chains, waste can appear at any of the eleven stages of food

production; harvesting, threshing, drying, storage, primary processing, secondary processing, product evaluation, packaging, marketing and distribution, postconsumer, and end-of-life (Alexander et al., 2013). In manufacturing, waste is largely unavoidable, and is due to inedible products such as bones, carcasses, organs, or technical malfunctions ("Preparatory Study on E.U. 27", 2010, p.10). Processing waste is due to legislative restrictions on outsize produce; supermarkets prefer aesthetically near perfect produce for display. There is limited information in the distribution and wholesale sector, as there is not a great deal of waste generated at this phase; waste is generally due to take back systems and last minute order cancellations. In the retail sector waste is generated from packaging defects, product damage or aesthetic issues that do not affect the quality or safety of the food. At the consumer level labelling is the major contributor of waste; best before, use by, and sell by are often misinterpreted as having to do with safety when they are not regulated by the government and are only an indicator of quality. Storage, packaging issues, and portion sizes are also an issue at the consumer level ("Preparatory Study on E.U. 27", 2010, p. 11).

Both of these nations/international cooperation of nations are considered to be among the most developed areas in the world, yet hunger and food insecurity remain a problem for twenty percent of their citizens (Buzby et al., 2014). The socio-economic landscapes of the U.S. and E.U. are similar, in that they have roughly equivalent populations and income distribution. The political situation is also comparable; an overarching body passes laws that member states adopt and implement depending on their geographical, historical and socio-economic situation.

In the U.S., 33 percent of waste is from consumers and sixty-six percent is from production and distribution. This means that in the U.S., 31 percent, or 133 billion

pounds, of the 430 billion pounds of the available food supply at the retail and consumer levels in 2010 went uneaten (Venkat, 2012, p. 431). The estimated total value of food loss at the retail and consumer levels in the U.S. was $161.6 billion in 2010 (Venkat, 2012, p. 431). This can be further broken down into food items themselves; meat, poultry, and fish (30 percent, $48 billion); vegetables (19 percent, $30 billion); and dairy products (17 percent, $27 billion) (Venkat, 2012, p. 432). In 2009, greenhouse gas emissions from avoidable US food waste were estimated at 367.82 Million Metric Tons (MMT) carbon dioxide equivalent.

The amount of food wasted in the E.U. annually is about about 89 million tons (Gunders, 2012, p.7). In the E.U., the consumer sector is responsible for 42 percent and production and distribution is responsible for 35 percent. Food waste in the E.U. generates about 170 MMT CO2 each year, from 89 M tons of food wasted ("Preparatory Study on E.U. 27", 2010, p.15). Without preventative policy, food waste emissions are expected to rise to 126 Mt by 2020 ("Preparatory Study on E.U. 27", 2010, p.15). When food is dumped into a landfill, it rots and releases methane into the atmosphere. Methane's warming potential is twenty-five times stronger than that of carbon dioxide ("Preparatory Study on E.U. 27", 2010, p.16). These emissions contribute to climate change, when this wasted food could be rerouted for human consumption, compost, or animal feed. By reducing the amount of food waste in each country, greenhouse gas reduction goals could be more easily met within the timeframes of COP21 and other international or national climate goals.

Food waste has been gaining more visibility recently due to a number of reports detailing how widespread the problem is, non-governmental organizations taking action to curb waste and hunger in certain communities and the international talks surrounding

climate change and policy. Many cities and regions have also begun to implement zero waste ordinances, which include goals to reduce the amount of waste sent to landfill and encourages designing products with a cradle-to-cradle lifecycle in mind, instead of cradle-to-grave.

Policy Background

Policies that identify and address environmental pollution issues have grown since the passage of national policies that regulate environmental conditions like water and air quality. These policies often take a command-and-control approach, with hard regulations and deadlines, but have evolved to include more voluntary actions and guidelines. Wasted food policies generally fall under the command-and-control approach as well; large institutions will no longer be allowed to toss food into landfills, and citizens will be required to sort their waste into compost, trash, and recycling.

As food waste policies become more widely accepted, there is increased interest in policy tools to further the growth of waste diversion. Investigating the similarities and differences in municipalities or regions that have implemented these policies, including the municipality characteristics, structure, and motivation at each stage of implementation will be key to identify what makes an early adopter and how to move other actors in the middle further along in their processes towards adopting similar policies. Adopters can be divided into five categories; innovators, early adopters, early majority, late majority, and laggards (Aoki, 2014). In the case of adopting new technology, there is a lag between early adopters and the early majority when there is a required behavior change (Aoki, 2014). This could be responsible for the lag in the implementation of separate waste collection systems at the municipal level. Different markets are

necessary for each adopter group because their purposes for adoption are completely different. Getting the early majority to adopt new policies is key to reach the critical mass needed where adoption of new policies or technology is inevitable.

Identifying the strategies used to expand early adoption, move municipalities or organizations in the middle further along and reach the tipping point will be crucial to prevent food waste and reduce emissions. Holding governments accountable to do more than just implementing policies aimed at lowering food wastage is a key component of a comprehensive policy toolkit. Legislators must be prepared to adopt a range of measures which will vary from broad policy frameworks to statements of intent. These will have to include both hard and soft policy measures like recommendations and guidelines to directives, regulations, and statutory acts.

The case studies that follow were chosen to represent these scales due to their relative early adoption of these types of wasted food policies and key characteristics. These characteristics include; a representative population (a cross-section of the country as a whole), size, and political context. Austin, Texas is situated in a conservative region of the United States yet has still made progress on key sustainability issues. Milan is one of the most economically important cities in Italy and is also known for being conservative, but has pushed through some impressive environmental legislation. Austin is one of the fastest growing cities in the U.S., with a 2.9% growth from 2013 to 2014 alone, and could become the size of Milan in a few years if this trend continues (Weissmann, 2015). These case studies will show what best practices Austin can learn from Milan to ensure it has successful programs and becomes a key leader in the state of Texas. Massachusetts is a relatively, liberal small state with a dedicated nonprofit sector that brings attention to environmental issues. This state is the first in the U.S. to enact a binding Commercial

Waste Ban, and will be used to demonstrate what types of actions other states can use to encourage behavior change acceptance. France is known for its culture surrounding food and is being used as a case study because it is facing many problems which the E.U. as a whole must address, including rising cost of living, homelessness, and increased food insecurity.

Case Studies

Municipalities

Austin, Texas has made a commitment to reduce the amount of waste sent to landfill by 90% by 2040 ("Environment", 2014). Part of this is the municipal composting program, which is in the pilot stage and has approximately 14,000 household participating in the curbside program. This was launched at the end of 2012 and doubled in size in 2014 ("Environment, 2014"). Neighborhoods in the pilot were selected to represent the city's demographics and to fit in with the current collection schedule. The city plans to gather and analyze data, evaluate the efficiency of the collection routes and refine the service. There is no increase in the price customers pay in their utility, and the decrease in the size of the trash bin may actually save customers money. Residents also have the option to request a composting class, held on the date they choose, in English or Spanish, at a local business. Composting is also promoted through rebates and training. More than 500 rebates have been issued and more than 1,000 residents have taken the composting training. Keep Austin Fed, a local nonprofit, also collects surplus food from commercial kitchens and distributes it to area charities. The city has also created the volunteer role of Zero Waste Block Leader for 'green-minded' active neighborhood residents who help spread the word about recycling and composting in their neighborhood ("Environment",

2014). The mission of a Block Leader is to unite the community to promote environmental issues and lead the effort in creating a cleaner city. These volunteers are trained by Austin Resource Recovery (ARR) staff and give presentations on behalf of ARR at community events, neighborhood association meetings, and churches, develop their own Zero Waste outreach events, and receive educational door hangers to share with neighbors and a quarterly newsletter ("Environment", 2014).

The city also produced a Zero Waste Tip Sheet for commercial food service, including grocery, restaurants, cafeterias, and catering. By October 1, 2018 all of these food enterprises will be required to ensure access to organics diversion services ("Environment", 2014). Food rescue operations like Keep Austin Fed have grown in number and popularity in the United States as food insecurity and sustainability awareness has increased. To make the Zero Waste program more accessible, the City has also created Zero Waste Ambassador positions, who help to monitor recycling containers, educate event goers about where to recycle at events, and help the City staff information/outreach booths to share information about the various programs and services the City offers ("Environment", 2014).

The Austin Office of Sustainability also published a State of the Food System Report that outlined the EPA Food Recovery Hierarchy and outlines the City's Actions to combat food waste. This Report defines a sustainable food system as "an integrated and interconnected network that includes production, processing, distribution, consumption, and waste management." ("State of the Food System", 2015). This is based on a definition of sustainability that includes the goals of prosperity and jobs, conservation and the environment, and community health, equity, and cultural vitality ("State of the Food System", 2015). The report then delves into key sectors of the sustainable food system in

the city, like farming, community gardens, selling the food from farms and community gardens, eating food, recovering food, and next steps. The Recovering Food section identifies the value of wasted food in the City as $208,144,169 for 194,527,260 pounds of food wasted annually ("State of the Food System", 2015, p. 20). Only 3,674,000 pounds of this was diverted ("State of the Food System", 2015, p. 21). Austin Resource Recovery launched a Restaurant Composting and Recycling Pilot Program in September 2012 in which 14 local restaurants participated. Over half of these restaurants experienced a considerable reduction in their trash collection ("State of the Food System", 2015, p. 21).

Going forward, the Office of Sustainability will continue to track the food systems indicators identified in the Report to better understand trends, identify activities that align with the goals states in the Imagine Austin Comprehensive Plan, pilot community engagement process to help identify food system assets within a neighborhoods and how these can be leveraged to increase access to healthy food ("State of the Food System", 2015). Finally, the Office of Sustainability created an on-line Food Information Portal that provides resources for starting food-related projects, including regulations and permits required to implement projects to reduce the barriers of starting a new enterprise ("State of the Food System", 2015).

Austin also has a Sustainable Community program that began in 1999 and became part of a citywide initiative to manage municipal government by results. These performance indicators cover everything from public safety to waste reduction. The indicators were used as measures of the performance of the local government, and published in the City of Austin Community Scorecard until 2004 ("State of the Food System", 2015). After 2004, they were folded into the performance of each department. Austin also has strong local efforts in green energy, transit-oriented development, and

building policies.

Milan, Italy has joined a global league of cities to implement an Urban Food Policy Pact. This Pact was signed in October 2015 by 116 cities and includes a number of provisions to address concerns about food systems in the city (Forster et al., 2105). The Pact acknowledges the current state of the food system and its inherent problems. This Pact also acknowledges that cities have a strategic role to play as cities host over half of the world's population and that share will continue to grow over the 21st century. The development of food policies with other urban policies and commitments to lower greenhouse gas emissions in a comprehensive way that integrates the private sector and civil society is key to the success of this policy. By signing the Milan Food Policy Pact, the mayor has committed to: develop sustainable and just food systems, encourage interdepartmental and cross sector coordination at municipal and community levels, push for coherence between municipal food policies and related subnational, national, regional, and international policies, encourage participation from all sectors of the food system in the creation of policies, review and amend existing policies to encourage the development of these sustainable food systems, share developments with the other cities that sign this pact, and encourage other cities to join.

This Pact also details a Framework for Action with recommended actions that cities can adapt to their particular situation. These actions are grouped by policy area. There are actions for ensuring an enabling environment for effective action, sustainable diets and nutrition, social and economic equity, food production, food supply and distribution, and food waste. The recommended actions for the food waste section include; convening food system actors to assess and monitor food loss and waste reduction, raising awareness of

food loss and waste, collaborating with the private sector along with research, educational, and community based organizations to develop policies and regulations, and saving food by facilitating recovery and redistribution for human consumption (Forster et al., 2015). Along with the Pact itself, there is an accompanying guidebook on Selected Good Practices from cities that have implemented these policies. There are several case studies on food waste included, including London, Paris, and Turin (Forster et al., 2015).

Milan is also part of the CIC, the Italian Composting and Biogas Consortium. This consortium unites public and private companies in the production of compost, involves producers of fertilizers, machinery and equipment and research bodies. Currently it includes 283 composting plants and 32 anaerobic digestion facilities in its ranks. The consortium also surveys and monitors biowaste collection in Italy, supports development of national legislation on biowaste management and composting, and communicates internationally with similar bodies. Italy separates the collection of food waste from other green waste, and collects food waste 2-4 times per week. These collection schemes are used both by households and by small commercial entities. Milan has a population of 1.5 million and is Italy's most important economic hub. There are about 5,000-7,000 residents per square kilometer. In 2012 food waste collection was only about 23 kilograms per inhabitant per year and the recycling rate was about 34.5% at this time. Milan is also separated into four districts of roughly equal size, with about roughly 120,000 households per district (Forster et al., 2015, p. 83). In November 2012, a gradual introduction of separate collection began. The steps included investigation, distribution of collection tools, and awareness and information. In the investigation stage, available space was verified for bio bins inside private property, preliminary contact was made with building managers, and critical areas were mapped. In the second stage, bio-bins were distributed, including a

10-liter kitchen caddy and 25 larger bins along with an info leaflets (Forster et al., 2015).

Once the collection system was in place, the waste was taken by non-compacting trucks running on methane or biodiesel to one of two transfer stations and was then trucked to either the anaerobic digestion facility or composting plant. The average non-compostable content was 4.3%. The diversion rate from municipal solid waste rose to approximately 86%. With the addition of household sector into the collection system, the rate rose 91 kilograms per inhabitant per year. This amounts to 260,000 tons of food waste per year. Overall customer satisfaction was high, rating the system highly efficient at around 60%, with 89% of customers saying they practiced separate collection of food waste regularly (Ricci-Jurgensen, 2014, p. 23).

These case studies show how municipalities can address mainly their citizens, in the case of Austin, and mainly the commercial sector, in the case of Milan. Both of these cases have aspects of commercial and residential, but seem to favor one approach over the other. Austin has many programs to engage its citizens, while Milan mostly focuses on the commercial sector. Both have also situated their policies in the broader context of food systems as a whole, with the State of the Food System Report and the Urban Food Policy Pact. These cases will be analyzed later in the context of political economy.

States/Countries

In Massachusetts, the Department of Environmental Protection (DEP) implemented a commercial food waste ban on October 1, 2014. The policy requires businesses and institutions that produce over one ton of organic waste per week, mainly schools and hospitals, to divert this waste from landfill by either donation to food charities, composting, conversion, or anaerobic digestion. The DEP also has a broader goal of

diverting food waste from the landfill by 35% by 2020 (“Commercial Ban”, 2014). This would result in about 350,000 tons per year of additional diversion (“Commercial Ban”, 2014, p. 2). As part of the 2010-2020 Solid Waste Master Plan, the DEP has identified some barriers that can be addressed with department action. These include: lack of data on sources and amounts of food waste, lack of collection and separation systems at generators, insufficient collection services, insufficient processing capacity, lack of end-markets for products, an unclear regulatory environment, and a need for a steady supply of source separated organics (“Commercial Ban”, 2014). The lack of information has been addressed with an updated food waste density mapping study that was completed in 2012. A further analysis of the organics portion of the waste stream used 2013 waste characterization study data, was submitted and will be reevaluated in 2016. The assessment of food waste generation data includes data on the Lead by Example Program to quantify current food waste diversion by State facilities and sector based information on how to advance organics at colleges/universities, hospitals, corrections, and convention centers (MassDEP Study Plan, 2016). The DEP also surveyed large food manufacturers/processors and other large generators in 2012, and the results should be available in the spring of 2016 (MassDEP Study Plan, 2016). The final goal for data analysis was to establish baseline measuring and monitoring protocol for statewide efforts, which was updated in February 2016, and an updated assessment based on 2016 data will be finished by June 2017.

For collection infrastructure, the DEP plans to promote industry best management practices to reduce food waste generation and create best management practices around food donation by engaging with stakeholders (MassDEP Study Plan, 2016). This requires determining the sectors and businesses most likely to be impacted by proposed waste ban,

which was completed, and developing sector specific best management practices for organics collection programs, also completed (MassDEP Study Plan, 2016). The DEP also established technical assistance and loan/grant programs for the various sectors, which are completed (MassDEP Study Plan, 2016). The DEP also created Pilot diversion programs at large generators and published 22 of these case studies in January 2016 (MassDEP Study Plan, 2016).

The lack of collection services is identified as one barrier that will be addressed to stimulate competition and reduce costs. To address this barrier, the DEP will provide updated information on MA food waste processors and haulers, provide financial assistance to exiting and potential haulers to initiate organics collection efforts, and work with regional groups to develop more efficient generator collection routes (MassDEP Study Plan, 2016, p. 5). The DEP will also support efforts to collect organics from residential sources by offering grants to municipalities to pilot collection, grants for capital equipment to collect organics at drop-off locations, and continue to offer technical and financial assistance for backyard composting and other on-site solutions (MassDEP Study Plan, 2016, p. 6).

Insufficient processing capacity actions include disseminating information on technologies and financial assistance programs, public education and outreach, encouraging municipal expansion of existing composting operations, development of anaerobic digestion facilities on state property, encouragement of new private development or expansion of existing organics management capacity, establishment of Recycling Business Development Grant, which is new as of 2016, and assess and support development of on-site food waste management solutions (MassDEP Study Plan, 2016, p. 6).

The lack of end-markets for products will be addressed in a few key ways. The DEP is working with the Massachusetts Department of Transportation (MasDOT) to enhance use of compost in highway construction and the agricultural sector to identify additional market outlets for compost materials and materials generated by anaerobic digestion facilities (MassDEP Study Plan, 2016). There will also be stakeholder meetings among major trade associations to discuss strategies for growing compost use later in 2016. Composting production and marketing workshops will also be held in Spring 2016.

The unclear and cumbersome regulatory environment required the DEP to revise regulations and implement the Waste Ban. The regulations were revised to: consider operations that collect, process and recover organic materials, establish levels of MassDEP review that maintain environmental and public health protection, provide clear permitting pathway, and allow wastewater treatment plants to accept organics for processing (MassDEP Study Plan, 2016, p. 7).

The DEP has also released a report called "Reducing Food Waste: A How to Guide for Businesses and Institutions" in 2013, which no other state in the U.S has done, providing a valuable resource at no cost for those businesses that fall under this regulation.

Massachusetts updated its Food System Plan in 2015 for the first time since 1974. This plan details the current state of the local food system in the state as opportunities and addressing challenges within the system. This plan was written by members of several food policy and planning councils who developed four goals, one of which was to reduce food waste ("MA Local Food Action Plan", 2015). The Plan calls for the strengthening of the Commercial Waste Ban as there has not been an appreciable reduction in the amount of waste sent to landfills. This ban has only been implemented for a year so it is hard to say

whether this is an accurate portrayal. The Local Food Action Plan was accepted by the MA Food Policy Council ("MA Local Food Action Plan", 2015). The next phase is focusing on priorities and implementation.

France launched a national pact against food waste in December 2012 and was signed on June 14, 2013. It provides the long-term goal of cutting food waste by 50% in France by 2025. These efforts are structured in 6 working multi-stakeholder groups; public, private sectors and civil society. These efforts include: action evaluation, indicator definition, technical and logistics optimization, awareness, training and education, developing links between stakeholders, institutional catering, and legal, regulatory and contractual measures (Forster et al, 2015). The National Pact offers recommendations for the prioritization of actions to be taken and indicates that recovery and redistribution of safe and nutritious food for human consumption should be preferred in case waste prevention at the source is not feasible. Estimates of food waste in the original packaging at the national level are around 16% (Forster et al, 2015, p. 2).

France also released a report in April 2015 called "Fighting Food Waste: Proposals for a Public Policy", the result of a yearlong study housed within the Ministries of Agriculture and the Environment. This report includes 36 proposals to curb food waste, some of which have been implemented or have been attached to other laws, like the supermarket waste ban. These proposals can be divided into three parts: stakeholder responsibilities, tools of public policy, and tools for a new model of development.

The proposals for stakeholder responsibilities include: setting into law a hierarchy of referable actions to fight food waste, creating innovative communication, clarifying expiration dates on food products, organizing local food recovery days, offering lifelong

education about sustainable food, banning supermarkets from throwing away edible excess food, mandating donations to charitable organizations, banning destruction of edible food, communications about food waste in retail advertisements, enabling donation of rejected "house" brand products, using QR codes to better inform consumers, adjusting portion and packaging sizes, encouraging use of food by-products for animal feed, extending tax incentives to processed agricultural products, better regulating gleaning activities, strengthening professional training on food waste, and promoting leftovers (Mourad, 2015).

Public policy tools include: creating a dedicated public agency to implement food waste policies, measuring food waste, mobilizing households to conduct a large-scale food waste study, establishing 1,000 community service positions focused on food waste, offering grants to encourage innovation, creating zero-waste certification program, requiring product quality in exchange for tax benefits, assessing impact of food waste regulations, and building innovative partnerships to overcome logistic challenges (Mourad, 2015).

The new model of development tools include; developing local working groups and local strategies against food waste, creating dedicated mechanisms in case of a production crisis, coordinating public policies related to food, forming an inter-ministry committee on food waste, requiring clemency on dumpster-diving and gleaning, establishing a European committee against food waste, pushing for changes in European regulations to reduce food waste, integrating food waste in COP 21 climate change negotiations and establishing a decentralized cooperation mechanism "1 percent" against food waste (Mourad, 2015).

Six of these proposals were approved by both bodies of the French Parliament in mid-2015. These policies emphasize the role of individual organizations and citizens to

address food waste and proposes a foundation for a national public policy to curb food waste in France. These will likely encounter resistance and not all will be adopted in the near future. However, because six have already passed the report has garnered significant worldwide attention to the issue (Mourad, 2015).

One of these six measures was the supermarket ban. French Parliament voted unanimously to require large grocery stores to donate unsold food. This new legislation went into effect on January 13, 2016 and requires all grocery stores of more than 400 square meters to sign contracts with food charities or banks by July 2016 (Derambarsh, 2016). Depending on how edible the food still is, it may be donated for animal feed as well, with preference given to feeding people. This law also allows citizens to create a food waste organization. Once an organization is formed, they can contact a local store, and arrange to pick up their unsold food for distribution (Derambarsh, 2016). These associations are split into two types: those that can store food in cold storage rooms and those that cannot. The organizations run by volunteers usually fall into the latter category, and must immediately distribute their food the same evening while to former is allowed to distribute their salvaged food over a period of time (Derambarsh, 2016). If there is any surplus food that a volunteer-run association is unable to pass on, then it will be automatically transferred to associations that can store food (Derambarsh, 2016). If a supermarket refuses to work with either of these associations, it will be fined 3,750 euros (Derambarsh, 2016, p. 1).

These case studies have similar focuses but are again in different stages of development and implementation. Massachusetts makes no attempt to change some of the more wasteful practices in the food industry and focuses mainly on acceptance of the policy and providing financial incentives for the industries who will collect the organic

waste while France makes a more holistic approach to curbing wasted food before it needs to be dealt with by collectors/processors.

National/International

The National Resource Defense Council (NRDC) and the United States Department of Agriculture (USDA) have published reports that detail how much food is wasted in the U.S. every year and what sector is responsible for how much. In 2015 the Environmental Protection Agency (EPA) and the USDA announced a national food waste reduction goal of 50 percent by 2030 (Pingree, 2015). The federal government will partner with charitable organizations, faith-based organizations, the private sector, and local, state, and tribal governments to implement this goal. This is an ambitious goal, but does not provide specifics on what possible policy tools will be implemented to support this goal or what incentives will be offered to wholesalers, retailers, and consumers to reduce waste.

The EPA has published a Food Recovery Hierarchy as a resource for organizations that want to reduce food waste that details how to reduce wasted food in order from most desirable to least. In order, they are; source reduction, feed the hungry, feed animals, composting and anaerobic digestion, and finally landfill/incineration ("Food Recovery Hierarchy", 2015). These are placed in order to maximize social and environmental benefits.

Maine Congresswoman Chellie Pingree introduced HR 4184, or The Food Recovery Act of 2015 in December 2015. This bill includes proposals for the consumer, producer, retail, school, and government levels. At the consumer level, the bill proposes to combat consumer confusion by clarifying that "sell-by" dates are manufacturers' quality suggestions only, require uniform labeling language, and sponsor a national campaign raising awareness on the impact of food waste and strategies to decrease wasted food at

the household level (Pingree, 2015). At the producer level, the bill aims to extend and expand tax deductions for farmers, retailers, and restaurants that donate high-quality food to organizations food insecure populations. This would include strengthening the Good Samaritan Food Donation Act, which provides liability protection to businesses that donate wholesome food. Investing in storage and distribution programs to help food banks maximize their resources is another goal. Studying barriers that prevent the donation of surplus food, such as perceived risk to business reputation and legal liability. At the school level, goals include; encouraging school cafeterias to purchase lower-price "ugly" fruits and vegetables, expanding grant programs to educate students about food waste and encourage food recovery, and strengthening connection between schools and farms to give both more resources to combat food waste. At the federal level, a need to create an Office of Food Recovery to coordinate federal activities related to measuring and reducing food waste and implementing food recovery initiatives is identified. Requiring companies that receive food service contracts with the federal government, including Congressional cafeterias, U.S. military bases, and federal prisons, to donate surplus food to organizations like food banks, food pantries, and soup kitchens is the final goal.

The Bill also includes research targets, which include; encouraging composting as a conservation practice eligible for support under USDA's conservation programs, supporting food waste-to-energy projects at the farm, municipal, and county levels, while ensuring that edible food that could feed hungry people is not being diverted to energy production, creating an infrastructure fund to support construction of large-scale composting and food waste-to-energy facilities in states that restrict food waste going to landfill, directing USDA to develop new technologies to increase shelf life of fresh food, and requiring USDA to establish a standard for how to estimate the amount of wasted

food at the farm level.

The federal government has announced a goal to reduce food waste by 50% by 2030. Reducing food losses by 15% would provide enough food for more than 25 million Americans every year (ReFED, 2016). An analysis by ReFED; Rethink Food Waste: Economics and Data, shows that a 30% reduction is achievable without major systems transformation, but a full 50% reduction would require policy transformation, consumer behavior change and innovation within the sector (ReFED, 2016, p. 2). The need for creative financing is also felt across the supply chain (ReFED, 2016, p. 2). This report recognizes that most food waste reduction activity occurs in the early adopter phase, and most solutions can occur in the prevention stage.

One of the challenges with this legislation will be getting it through Congress. It is not clear where the Office of Food Recovery will be housed, who it will be run by, or where the funding will come from. This office has objectives that are similar to some of the EPA and USDA programs. These agencies already work together on the Food Recovery Challenge, so this proposed Office may be a natural result of this project. Finally, the EPA released the Food Steward's Pledge in late January 2016, an initiative to engage religious groups to help redirect the wasted food to hungry people.

The Preparatory Study on Food Waste Across E.U. 27 was released in 2010 and has data for each sector that is responsible for some portion of food waste and country-specific data. This is key to understanding what the state of the problem was before policy intervention, and where they predict it would have gone without some intervention. The E.U. 27 Report suggests that food waste prevention initiatives use policy tools like; food

waste data reporting requirements, date labelling coherence, targets for food waste prevention, subsidies on collection of food waste in member states, and targeted awareness campaigns, which will significantly reduce the amount of food waste in the E.U.

In 2011, the European Commission released a report called a “Roadmap to Resource Efficient Europe”, which identified food waste as a major sector where efficiency could be improved. In 2014, as part of the “Towards a Circular Economy” initiatives, a zero waste policy, food waste reduction goal of 30 % by 2025, and requirements for member states to implement national plans in accordance with the E.U.-wide policies were adopted. In 2015, the Commission announced that it would withdraw its proposal on waste and replace it by the end of the year with a more ambitious proposal to promote circular economy. These targets were instead replaced with less ambitious targets, sparking outcry at the submission to the industry. Circular economy systems keep the added value in products for as long as possible and eliminates waste. They keep resources within the economy when a product has reached the end of its life, so that they can be productively used again and hence create further value. Transition to a more circular economy requires changes throughout value chains, from product design to new business and market models, from new ways of turning waste into a resource to new modes of consumer behavior. This implies full systemic change, and innovation not only in technologies, but also in organization, society, finance methods and policies. Even in a highly circular economy there will remain some element of linearity as virgin resources are required and residual waste is disposed of. This is an approach that will influence the ultimate extent and strength of the policies being developed in the E.U.

The European Commissions keeps track of E.U.-level and individual member state actions against food waste. The Commission believes that being more efficient will save

money and lower the environmental impact of food production and consumption. Food waste is included as part of the larger new Circular Economy Package to stimulate this transition and boost global competitiveness, foster sustainable growth, and generate new jobs ("E.U Actions", 2015). This Circular Economy package includes an Action Plan, an annex outlining the timetable for proposed activities, and related legislative proposals. The E.U. is also committed to meeting the Sustainable Development Goals, adopted in September 2015, which includes a target to halve per capita food waste at the retail and consumer level by 2030, and reduce food losses along the food production and supply chains ("E.U. Actions", 2015).

To support the achievement of the SDG targets for food waste reduction in the E.U., the Commission has outlined several key steps that should be taken. A common E.U. methodology needs to be developed to measure food waste consistently in cooperation with Member States and stakeholders. A new platform involving both member states and actors in the food chain needs to be created in order to help define measures needed to achieve the food waste SDG, facilitate inter-sector co-operation, and share best practices and results achieved ("E.U. Actions", 2015). Measures to clarify E.U. legislation related to waste, food and feed and facilitate food donation and the use of former foodstuffs and by-products from the food chain for feed production, without compromising food and feed safety. Finally, examining ways to improve the use of date marking by actors in the food chain and its understanding by consumers, in particular "best before" labelling is identified as a need.

Analysis of Policies in the context of Political Economy

The concept of political economy in the context of food systems states that cheap food allows wages to remain low, which increases corporate profitability and investment in new ventures which can generate growth in employment and national revenues. This ignores agricultural producers, their labor, and environmental externalities.

Recognizing that food waste occurs at all stages along food supply chains, food waste can be distinguished into not only the location where it arises but also the main place where the reasons for different kinds of food waste come into play, and the nature of the cause, which can be structural/systemic, economic, material, environmental and/or cultural (Alexander et al., 2013). The branding of food crates additional value and pressure to protect brand integrity.

The anatomy of food supply chains in the context of political economy has shown where wasted food occurs and why. The policies surrounding food waste generally focus on overconsumption, however, especially at the consumer level. The 1999 E.U. Landfill Directive targets the reduction of biodegradable materials sent to landfills, with penalties for noncompliance (Alexander et al., 2013). Countries in the E.U. have created specific agencies in response to this to meet policy commitments. Another major policy focus has been on the municipal waste stream, as demonstrated by the case studies above in Austin and Milan. This signals a broader ideological shift away from state regulation of private business towards the rights and responsibilities of the empowered consumer citizen (Alexander et al., 2013). Therefore, the reasons for food waste must be considered, but it also crucial to ask why some are addressed in policy while others are excluded.

Overconsumption is generally positioned as a symptom of the reckless consumerism of today's economy. This is featured in several reports produced by states agencies in both the E.U. and U.S. In the United Kingdom, Waste and Resources Action Programme

(WRAP) has produced several reports on the assumption that social knowledge has been lost on how to purchase, store, and cook food properly, which, together with busy and unhealthy lifestyles, has produced this level of consumer waste. WRAP's solution to British food waste is to attend deficits in consumer knowledge; rectifying knowledge deficiencies rather than structural causes is one of the means to the policy fix. However, simply putting large grocery stores in low-income areas and food deserts is not enough; consumers must have the time to prepare nutritious foods and make enough money to feel the time used is worth their effort. This is the reason why efforts to address food deserts often fail; the working poor often feel that they must have dinner in their hand when they come home to their families. Efforts have been made address this tension with some success, alternative grocery stores like the Daily Table in Dorchester, MA and Wefood in Copenhagen, Denmark provide food that otherwise would have been thrown out at steep discount. The Daily Table even goes so far to provide ready made meals for shoppers on the run, but does not market them as healthy, instead marketing them as delicious and affordable to ensure the dignity of their patrons is preserved.

There is a stronger ideological critique of the body social at work in these policies. Families that do not prepare and cook food and eat together are the manifestation of the breakdown of both the social and biological body (Alexander et al., 2013). There is a class-based approach to these policies that discredits and closes out households that do not conform to this ideal. This is part of a larger context of disciplining consumers for overconsumption. Yet overconsumption is not new; wasted food was a common occurrence in preindustrial times. Therefore, deliberate wasting of food can be understood as an expression of power and sociocultural norms. The value that food gains when it is branded with a company logo prohibits this commodity from use outside of its supply

chain. This, along with food safety concerns, explains the reasons for locking Dumpsters and pouring bleach on discarded food at retail stores.

This examination of political economy in food suggests that food waste cannot be understood simply as what is or is not edible and nutrition lost/gained. These food-waste generating activities establish identities and construct social relations between corporations and consumers. Deliberate food wasting is a manifestation of social power, as there will always be food waste in human society to varying degrees (Alexander et al., 2013).

Analysis of Case Studies in the Early Adopter Context

Austin has a population of over 900,000 residents over 278 square miles and is a mix of urban and mostly suburban neighborhoods ("Quickfacts Austin", 2015). The median household income is about $52,000 ("Quickfacts Austin", 2015). The environmental movement is well established in the city and has pushed for adoption of several key ordinances to address pollution in a conservative state. Austin is also home to the University of Texas at Austin, and utilizes the municipal government to enforce the zero waste goal of reducing waste sent landfills by 90% by 2040. The city is largely suburban, however, a large percentage of the housing stock is single-family homes and cars are essential survival tools (Quickfacts Austin", 2015).

Milan has a population of 1.3 million in the city over 70 square miles and 3.2 million people in the metro area ("City of Milan", 2015). Milan is also a mix of urban and suburban neighborhoods, and the median household income is $58,000 ("City of Milan", 2015). The municipal government utilizes the CIC consortium operate the separate waste collection system. The city has also produced the Urban Food Pact, reviewed above, that

100 cities have also signed onto voluntarily. The University of Milan is one of the top tier universities in Italy. The characteristics of Milan and Austin could be similar is Austin keeps growing in size the way it has been for the past several years. Milan and Austin are key examples here because they have systems that are well established and have been part of a larger environmental movement for some time.

In the case of early adopter municipalities, agencies in the city will often partner with a research institution of university to develop a pilot program for a separate waste collection system for households and commercial or industrial actors. The research institution can provide mapping and analysis for the project, help identify what neighborhoods to target, and help measuring outcomes of the pilot program.

The reasons for adopting food waste policies are diverse. Austin is part of the Zero Waste movement, has developed a Climate Protection Program administered by the Sustainability Office, and has a strong environmental movement. Milan is part of a larger consortium that is trying to divert as much organic waste from landfills to meet ambitious targets. If Austin adopted The Milan Urban Food Pact, it could situate the food waste policies in a strong policy context, instead of only in the zero waste system context. By signing onto this Pact, Austin could further develop its Sustainable Food Policy Council as a whole which would strengthen the public acceptance of food waste policies. The city has not expanded the pilot program to all of its neighborhoods so these are recommendations for when the system is expanded and includes more commercial and industrial actors.

Incorporating food waste fully into municipality policy requires an acknowledgement that waste occurs at all points along the supply chain, and some of these points may be out of reach to fully address at this level by individual municipalities alone. Also, location and cause are often not the same for food waste. Not all wastage in

households is caused by the individual consumer. Municipal policy could intervene here to encourage smaller portion sizes at restaurants, tips for successful storage of fresh items, and encouraging partnerships between large retailers and local nonprofits to reroute potentially wasted food to citizen consumers who need it.

Massachusetts has a population of 6.8 million spread over 10,555 square miles ("Quickfacts MA", 2015). The median household income is $65,000 ("Quickfacts MA", 2015). Many businesses were already moving away from throwing out food waste when Massachusetts' DEP implemented the commercial food waste ban. Work on this ban began six years before it became law and made for an unusually smooth legislative process as many producers of waste like large grocery stores have already had diversion policies in place or on their radar for years. (Kaplan, 2014). The National Waste and Recycling Association expected to testify against the ban, but ended up not having to as they thought it was good enough as it only impacts 1,700 businesses and not individuals or small businesses (Kaplan, 2014). However, this ban does not address where the food waste will go. This ban was implemented to reduce the need for landfills, saves money on disposal costs, reduces greenhouse gases, provides a source for clean renewable energy, creates clean energy jobs, and produces useful products like fertilizer and compost (Kaplan, 2014).

Massachusetts needs to provide incentives to expand the infrastructure that will support this ban. The state currently offers $1 million in grants, technical assistance, and $3 million in low assistance loans to spur development of local composting and anaerobic digestion facilities. Although the state is encouraging organizations to get creative and form partnerships, it may help to look at France's new Food Plan and implement some of these policies that will support this legislation like actions that address individuals once

the infrastructure is in place from the commercial ban.

France has a population of 67 million over 248,000 square miles (France, 2007). The median household income is USD $28,800 (France, 2007). The supermarket ban was part of the larger report "Fighting Food Waste" that contains 36 policy proposals to fully address food waste issues nationally. The Federation of Commerce and Distribution, which represents supermarkets, has criticized the new regulations as burdensome to grocery stores, who are responsible for 5% of waste, and most stores have signed contracts with aid groups already (Wilsher, 2015). A campaign by French chain Intermarché to glorify and sell ugly fruits and vegetables went viral. This produce was also sold at a steep discount compared to regular produce, which helped the chain to reach lower income consumers. A parliamentary report has stipulated that the new law must not put an unfair burden on charities, with the unsold food given to them in a way that it is ready to use, so they don't have to sift through food that is already rotten. The municipal councilor from Courbevoie, Arash Derambarsh, launched a Change.org petition that explained the proposed legislation in early 2015 and received over 210,000 signatures and several French celebrities endorsing the cause (Delman, 2015). This law also introduced an education program about food waste in schools and businesses. A measure in February 2015 removed the best-before dates on fresh foods. France lacks a safeguard for retailers which has made retailers hesitant to donate food near its expiration date and encouraged the practice of pouring bleach over dumpster food to prevent dumpster diving. Outrage over the amount of food wasted every day by retailers (about 40 kilos) has been a huge propeller of this new legislation.

France has a national goal of reducing food waste by 50% by 2025. Waste has become a large issue in the country as landfills reach capacity and targets for greenhouse

gas emissions tighten. The cost of living in France is also high, and homelessness is widespread (Derambarsh, 2016). Supermarkets in France also have a nasty habit of throwing away food just before its expiration date and dousing thrown away food in bleach to discourage people from scavenging in them at night after closing (Chrisafis, 2016). This supermarket was ban may not be the most applicable to other countries in the European Union, as retail is responsible for a small percentage of total wasted food: retail is only responsible for 11% in France (Chrisafis, 2016). For example, in the United Kingdom, the retail sector is responsible for only 1.7 percent of total food waste (Delman, 2015).

In both of these cases, the state has power to implement policies within a broader, national or international setting. Both of these cases could do more to address the waste in supply chains within their boundaries. Encouraging gleaning and preventing waste in processing and distribution will require additional policy support as these recovery efforts are often not economically viable on their own. Simply requiring large supermarket stores to donate unsold food or send it to an alternative processor is not enough. To fully address all effects of wasted food, large retail stores could be required to sell aesthetically imperfect produce at a discount, and develop contracts with farmers/their organizations to take this type of produce. This produce could also be used to make grab-and-go meals, which hides the aesthetic imperfection while adding value for the retailer. Finally, to address the expiration date labelling issue these cases and their national/international bodies must put pressure on with large international food companies to re-educate them on the benefit of removing or clarifying these dates and coming up with a solution to lessen waste. This might include a disclaimer on what the date actually means or standardizing production so only one of the phrases is used.

Massachusetts and France have both set up grant and/or loan programs for certain

sectors affected by these bans, like haulers and processors, but will have to ensure that funding for these remains in the budget as these bans mature. Once these sectors are economically viable on their own, these bans will have a definite future.

The European Union is made up of 28 Member Countries with a total population of over 508 million ("European Union Fast Facts", 2015). The broad priorities are set by the E.U. Council, which brings together national and E.U.-level leaders, but has no power to pass laws ("European Union Fast Facts", 2015). Directly-elected MEPs represent citizens in the Parliament. The interest of the E.U. as a whole are promoted by the European Commission, whose members are appointed by national governments, and governments promote their own national interests in the Council of the European Union ("European Union Fast Facts", 2015). The E.U. has also adopted the Sustainable Development Goals developed by the United Nations, which includes food waste. However, the waste reduction goal of 30% by 2025 was dropped in late 2015. Instead, the Circular Economy legislation proposals ask countries to take unspecified measures to curb food waste, with no timeframes or targets (Neslen, 2015). The Commission will not be required to take action if states fail to meet these weak targets. Industry groups have been blamed for influencing policymakers and weakening these goals.

The United States is made up of 50 states with a total population of 320 million ("Quickfacts U.S.", 2015). The U.S. has a robust public-private donation system in place utilizing hunger relief organizations. Tax incentives and the Good Samaritan Food Donation Act also protect food donations and provides a legal framework to ensure donors are not liable for harm done by donated food as ling as it was given in good faith. Tax deductions have recently been enhanced for food donations that allows individuals and small farms and businesses to reduce their taxable income by donating food (Pingree,

2015). This was signed into law by President Obama in December 2015. As the problem of food waste has been increasingly written about and discovered by many consumers in the U.S., the demand for action has grown and helped expand and establish new programs across the country. The release of the EPA and USDA goal of reducing food waste by 50% by 2030 shattered the silence from the federal government on this issue. The Food Recovery Act has ushered in the action phase on this problem.

Early adopters have shown that there are successful policy interventions to address food waste. There are enough early adopters and early majority in the U.S. and E.U. that a tipping point has been reached. This means that there is enough pressure from non-governmental organizations and cases like the ones described above to force these governments to take significant action to hold large stakeholders responsible. Supportive policy makers, a flexible infrastructure, engaged civil society, active environmental movement, and awareness campaigns are all key to the success of new food waste policies as they were all included in some way in early adopter cases.

The context of food waste in the U.S. and E.U. are very different. The Circular Economy concept has gained traction with Member States and includes measures to address food waste. Food waste legislation in the U.S. is situated within larger environmental goals. Both the U.S. and E.U. have committed to the Sustainable Development Goals put together by the United Nations, but there are few consequences if the countries fail to fully implement these changes.

These policies are also in different stages. The E.U. has been producing policy proposals on or related to food waste since 2011, while the U.S. has just begun to fully address food waste in 2015. The success that the E.U. has enjoyed in implementing these goals seems to have come to an end with the new Circular Economy goals and the large

industry influence. The ratification system in the E.U. may also pose a challenge to ensure all Member States are fully participating.

Recommendations

Austin makes a sincere effort to engage its residents in sustainability and food issues. Tracking data on participation in city events and curbside collection, as it is further implemented, will help the city understand how it can better communicate its goals to the public and increase participation. The Milan Pact cities created best practices, like the vented kitchen caddy and compostable bio bags, allowed for large acceptance and participation. Similar items could be used in Austin when the city expands its collection program to ensure similar participation rates. Identification of best practices for each sector will be key to further improving the diversion rate from landfills. This will include efficient routes for commercial and household collection, grants to encourage the expansion of the organics collection industry, and efforts to engage consumer citizens in meaningful ways. Milan could create similar volunteer roles for its residents in each neighborhood to build a sense of community and competition to increase involvement in its programs. Residential organics programs are often costly, and ensuring that the pilot in Austin and Milan continue to be financially successful will require careful urban planning.

Both Massachusetts and France banned large institutions from throwing away unsold or expired food. Massachusetts needs to fully implement the new State Food Plan and continue to carefully monitor the Commercial waste ban to see what its impact is over the next five years. The Commercial ban should be re-evaluated in 2020 and potentially move to a lower threshold of 0.5 tons per week if the collection services industry and demand for these products have grown enough. France should expand its supermarket ban to

encompass other large producers of waste like hospitals and universities so it captures a larger portion of the total wasted food. By providing grants to expand the collection services industry, encouraging collection of household waste, and implementing the rest of the 36 proposals outline in the Fighting Food Waste Report France will become an international leader in sustainable food systems. Massachusetts allowed wastewater treatment plants to accept organic wastes as part of the reform in policies. In-sink food waste disposers should also be considered as part of this strategy as a simple, cost-effective strategy. This would avoid adding new vehicles to the road and would lessen emissions from trucking organic waste to processors.

The recommendations submitted under the Food Recovery Act of 2015, if fully implemented, will help to lessen the amount of waste produced in the U.S. The E.U. Circular Economy needs to come up with stronger targets for waste reduction in the context of these policies, failure to do so will garner wrath from its citizens and increase negative views of the international body as a whole. Better deployment and awareness campaigns of food waste management resources like Food Waste Management Calculator, Food Recovery Challenge, and the Food Waste Log, all by EPA, will also help increase awareness. More initiatives like these can be expected as the EPA begins to implement their goals and engage broader numbers of stakeholders in the fight. Ensuring that there are similar communications in the E.U will also help raise awareness and ensure that all sectors are targeted, not just consumers. If the U.S. and E.U. work together on wasted food, they could regulate large international food corporations and change the industry. This could include introducing legislation to clarify expiration dates to ensure clear definitions and providing markets for aesthetically imperfect produce.

However, addressing wasted food and its sectors alone will not fully solve problems

inherent to food systems. Food systems intersect with many other movements including the environmental and labor movements. To fully ensure that the amount of wasted food is lessened, a hard look at the environmental externalities of industrial agriculture and the minimum wage is needed.

Conclusion

Reducing the amount of food wasted in the U.S. and E.U. will not be an easy task. It requires detailed policy initiatives, multiple sectors involved in monitoring and evaluation, and engaging consumers. Reducing wasted food has economic, social, environmental, and nutritional benefits. Utilizing new software to track food can increase a food company's profits by as much as ten percent, a huge amount in an industry with slim margins (Pellegrini, 2016). The case studies outlined in this paper are a promising start in this effort, but should be expanded over time to full address this problem. Working with the various sectors involved in wasted food to fully address the causes and offering financial incentives if needed will encourage widespread acceptance of new policies. These early adopter cases suggest that detailing comprehensive plans, engaging citizens, and planning for new markets are key to implementing these kinds of policies on a larger scale. The success of these case studies and other early adopters has created an early majority in both the U.S. and E.U., and the adoption on a larger scale is imminent. By examining the political economy of food supply chains and wasted food, it is shown that simply addressing overconsumption and retail food spaces is only the start. Wasted food exists in the context of cheap food, labor, and harsh environmental externalities. Policies with the overarching goal of reducing wasted food need to address these larger concerns as they mature and become established.

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