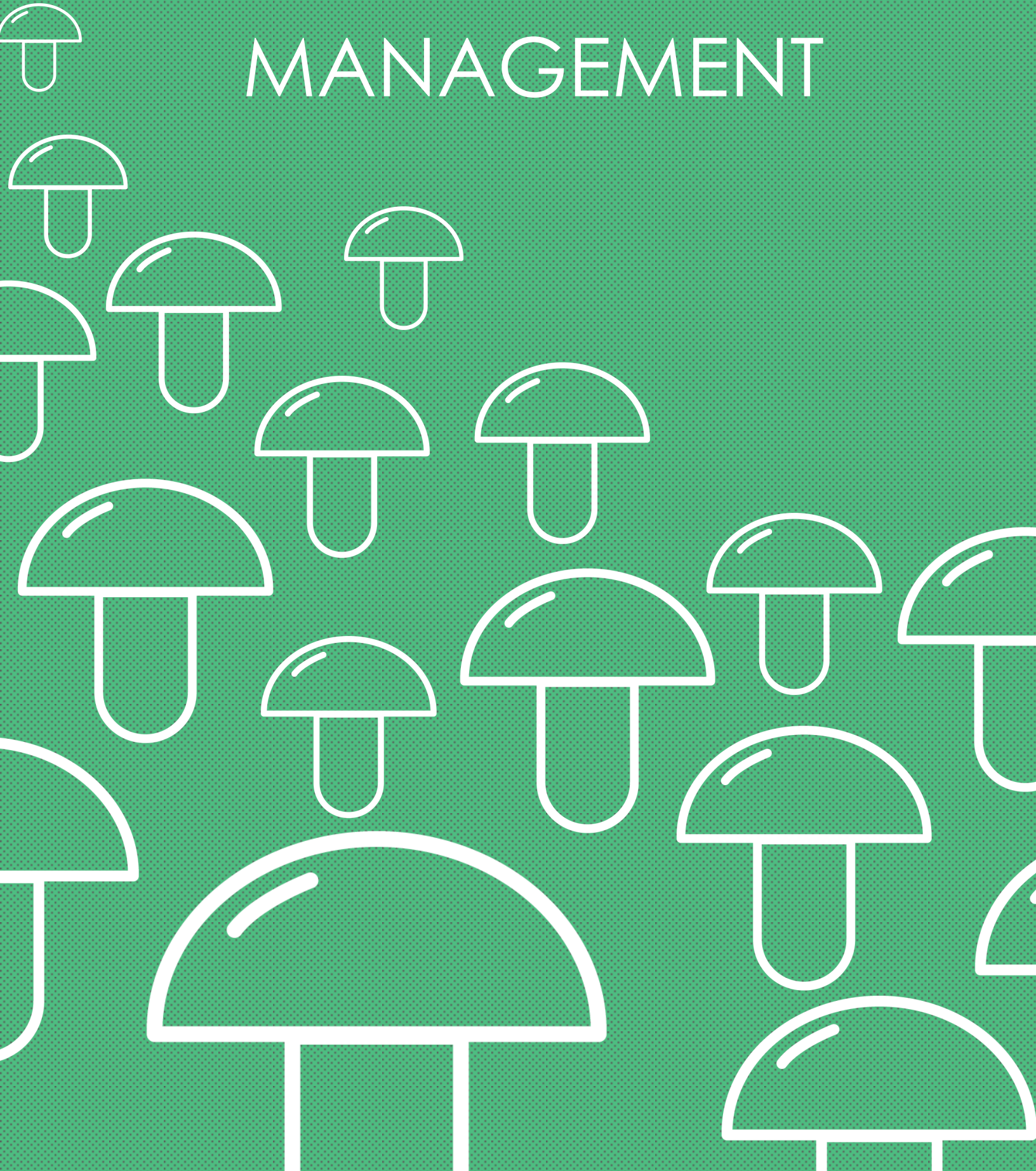


# 7.0 FOOD WASTE MANAGEMENT



## 7.0 FOOD WASTE MANAGEMENT

### 7.1 Findings

This section serves to provide both an introduction to food waste in Canada and an overview of food waste and food waste management in Middlesex-London.

The objectives of this section are:

- To assess the different types of waste across the food value chain;
- To identify the impacts of food waste;
- To quantify the different types of food waste in Middlesex-London, from producer-to-consumer;
- To document initiatives and efforts that have been made to reduce food system waste in the local community; and
- To assess the effectiveness of current efforts to reduce food system waste.

After food waste in Canada and its impacts are discussed, this section explores food waste and food waste management in Middlesex-London. The initiatives and efforts that are being made to reduce food waste in the area are limited; therefore, additional attention is paid to opportunities for food waste management change in Middlesex-London. Some of these opportunities, which require a value chain approach to be taken, exist at the individual household and municipal levels require the support of innovative policy.

#### ***Food Waste***

The term food waste is broadly used to describe “food or edible material (both solid food and liquids) originally meant for human consumption in its entirety (such as fruit and vegetables) or after processing (such as wheat into flour, then bread), but is lost along the food chain.”<sup>130</sup>

This umbrella definition of food waste includes both food loss—which takes place at the beginning and middle stages of the food supply chain and may result from either environmental or human factors—and food waste, as it is traditionally understood, as being the loss of food at the end of the supply chain.<sup>131</sup> However, when food waste is reported, what is often accounted for is only “terminal” food waste, which is the matter that goes into landfills or is used for composting.<sup>132</sup> For this reason, when speaking about food waste and especially when planning food waste change, it is important to consider food waste as including “any activity that costs

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<sup>130</sup> Nicoleta Uzea et al., “Developing an Industry Led Approach to Addressing Food Waste in Canada,” Provision Coalition, 2013, Print, at p. 10.

<sup>131</sup> Nicoleta Uzea et al., “Developing an Industry Led Approach to Addressing Food Waste in Canada,” Provision Coalition, 2013, Print, at p. 10.

<sup>132</sup> Martin Gooch, et al. “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 2.

more than the value it creates.”<sup>133</sup> This Community Food Assessment report does not distinguish between food loss and “terminal” food waste; therefore, when the term food waste is used it is meant to encompass both food loss and the broader definition of food waste, unless otherwise stated.

Contrary to popular belief, neither “food miles” nor the “plastic packaging” used throughout a food product life cycle are the primary causes of waste.<sup>134</sup> Seven factors have been identified as contributing to the creation of various forms of food waste, and these factors result from the behaviour of individuals. These factors include: overproduction, defects in products or equipment, unnecessary inventory, inappropriate processing, excessive transportation, waiting, and unnecessary motion. These factors are manifest by individuals in different ways, depending on where along the food value chain the individual is located. However, unnecessary inventory, for example, “occurs at any point along the chain, including households,” and this creates a diverse set of wastes, including: “*excessive delay, poor customer service, long cycle times, excessive spoilage.*”<sup>135</sup> Therefore, any local plans for waste recovery and management in Middlesex-London will need to identify where and how the seven creators of waste are contributing to the waste problem in the area, and ultimately, who needs to be part of the solution.

### ***Food Waste in Canada***

Food waste in Canada is a \$27 billion annual problem that sees 40% of all the food produced processed, distributed and sold across the country, not being consumed. The economic impact of this problem can be put in perspective by comparing it to either the total amount that Canadians spent at restaurants in 2009 or the combined Gross Domestic Product of the 32 poorest countries.<sup>136</sup> What is most interesting about the food waste problem in Canada is that, while food waste is taking place right across the food value chain, the distribution of food waste is very uneven. The Agri-food@Ivey and Value Chain Management Centre have mapped out the distribution of food waste in a way that connects the size and scope of the problem to the primary value chain contributors, specific hot spots, root causes, and most importantly, the stakeholders who can change the outcome.

Table 36 is an adaptation of their Food Waste Problem Map. Households, which are creating 51% of the food waste in Canada, are by far the greatest contributor to the problem, followed by the processing and packaging industry (18%) and then retail sector (11%). What is interesting to note about the hot spots for food waste is the number of times that specific hot spots come up across the food value chain. For example, fruits and vegetables are hot spots in 5 of the 7 areas where food waste occurs. This frequency can be explained by the intimate relationship that fruits and vegetables have with the seven creators of food waste above, which

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<sup>133</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 2.

<sup>134</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 3.

<sup>135</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 4.

<sup>136</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 2.

are all captured below in the reasons why food waste occurs. In other words, fruits and vegetables are more likely to become food waste than other types of food because they are more affected by factors causing food waste.

Uzea *et al* group these factors into the five *root causes* of food waste in Canada. These include:

- Human behaviour;
- Natural breakdown of food – particularly of fresh and unpackaged food;
- Limitations of technology or lack of advanced technology, e.g. equipment, packaging, etc.;
- Perceptions of risk and risk avoidance, among both businesses and consumers; and
- Unintended consequences of regulation.<sup>137</sup>

**Table 36: Annual Food Waste in Canada (Original Source: Agri-food@Ivey and Value Chain**

How BIG is the problem?						
40% of all food produced or \$27 billion						
Where does food waste occur?						
Field (9%)		Processing & Packaging (18%)	Distribution (3%)	Retail (11%)	Food Service (8%)	Households (51%)
Crop/livestock Post-Harvest	Production					
What are the hot spots for food waste?						
1. Fruits & vegetables 2. Seafood	1. Fruits & vegetables 2. Meat 3. Grain products	1. Grain products 2. Seafood 3. Meat 4. Dairy products 5. Beverages	1. Fruits & vegetables 2. Seafood 3. Meat	1. Fruits & vegetables 2. Seafood 3. Meat 4. Bakery & deli 5. Ready-made food	N.A.	1. Fruits & vegetables 2. Meat & seafood 3. Grain products 4. Dairy products 5. Beverages
Why does food waste occur (root causes)?						
<ul style="list-style-type: none"> <li>• Climate change &amp; weather extremes</li> <li>• Incorrect planting &amp; subsequent crop management</li> <li>• Incorrect harvesting</li> <li>• Market conditions (low price, lack of demand)</li> <li>• Labour shortages</li> <li>• Over-production</li> <li>• Over-feeding</li> <li>• Health management protocols/processes</li> <li>• Lack of connectivity to downstream elements of value chain</li> <li>• Regulatory standards</li> <li>• Food safety scares</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate sorting</li> <li>• Spillage &amp; degradation</li> <li>• Grading standards for size &amp; quality</li> </ul>	<ul style="list-style-type: none"> <li>• Incoming quality</li> <li>• Process losses</li> <li>• Cold chain deficiencies</li> <li>• Employee behaviour</li> <li>• Poor machine set up</li> <li>• Inaccurate forecasting</li> <li>• Contamination</li> <li>• Trimming &amp; culling</li> <li>• Supply/demand issues</li> <li>• Date codes</li> <li>• Customers' rejections</li> </ul>	<ul style="list-style-type: none"> <li>• Damage</li> <li>• Demand amplification</li> <li>• Rejection of perishable shipments</li> <li>• Poor record keeping allowing some products to exceed shelf life</li> <li>• Inappropriate storage conditions</li> <li>• Incorrect/ineffective packaging</li> </ul>	<ul style="list-style-type: none"> <li>• Inaccurate forecasting</li> <li>• Food safety issues</li> <li>• Increasing market share of ready-made food</li> <li>• Date codes</li> <li>• Fluctuations in delivery from suppliers</li> <li>• Cold chain deficiencies</li> <li>• Rejection on arrival at distribution centres or store or during handling</li> <li>• Increasing merchandising</li> </ul>	<ul style="list-style-type: none"> <li>• Plate composition</li> <li>• Expansive menu options</li> <li>• Over-serving</li> <li>• Unexpected demand fluctuations</li> <li>• Preparation mistakes</li> <li>• Improper handling &amp; storage</li> <li>• Rigid management</li> </ul>	<ul style="list-style-type: none"> <li>• Excess purchases</li> <li>• Infrequent purchases</li> <li>• Date codes</li> <li>• Attitudes towards food</li> <li>• Over-preparation</li> </ul>

<sup>137</sup> Nicoleta Uzea *et al.*, "Developing an Industry Led Approach to Addressing Food Waste in Canada," Provision Coalition, 2013, Print, at p. 14.

How BIG is the problem?						
40% of all food produced or \$27 billion						
		<ul style="list-style-type: none"> <li>Inconsistency in quality of ingredients</li> <li>Food safety issues</li> </ul>		standards <ul style="list-style-type: none"> <li>Product differentiation</li> <li>Market over-saturation</li> </ul>		
Who can change the outcome?						
<ul style="list-style-type: none"> <li>Managers</li> <li>Employees</li> <li>Value chain partners (processors, retailers)</li> <li>Service providers (equipment, genetics)</li> <li>Regulators</li> </ul>	<ul style="list-style-type: none"> <li>Farmers</li> <li>Service providers (storage, equipment)</li> </ul>	<ul style="list-style-type: none"> <li>Managers</li> <li>Employees</li> <li>Value chain partners (retailers, agricultural producers)</li> <li>Service providers (equipment, process engineers)</li> <li>Food banks</li> <li>Waste users</li> </ul>	<ul style="list-style-type: none"> <li>Managers</li> <li>Employees</li> <li>Service providers (equipment, transport, packaging)</li> <li>Value chain partners (farmer, processors/packers, retailers, food service)</li> <li>Food banks</li> </ul>	<ul style="list-style-type: none"> <li>Managers</li> <li>Employees</li> <li>Service providers (packaging, technology)</li> <li>Food banks</li> <li>Waste users</li> </ul>	<ul style="list-style-type: none"> <li>Managers</li> <li>Employees</li> <li>Waste users</li> </ul>	<ul style="list-style-type: none"> <li>Consumer organizations</li> <li>Schools</li> <li>Media</li> <li>Retailers</li> <li>Consumers</li> </ul>

### ***Environmental Impact of Food Waste***

The economic impact of food waste is extraordinary and the environmental impact is just as concerning. Food production and waste management activities directly affect natural resources, such as energy and water, and this can contaminate the environment in which food is grown. It is estimated that at least half of food grown is discarded before and after it reaches consumers, with approximately one third to half of landfill waste coming from the food sector.<sup>138</sup> It is well known that recycling, composting and reducing the amount of waste sent to landfills is better for the environment. The healthier the environment, the stronger the food system can be. When landfills are used instead of composting food scraps and organic matter, the matter disposed produces methane (a potent greenhouse gas) as it decomposes, which harms the environment.<sup>139</sup> This is a problem because methane is a radiative active gas that is very effective at trapping heat in the planet’s atmosphere. This contributes to the greenhouse effect by heating the Earth’s surface to a temperature that is beyond that which it would reach in the absence of such radiation from the planet’s atmosphere.

A study looking at food waste globally reports some astonishing environmental impacts of food waste on the climate, water, land, and biodiversity. Without accounting for greenhouse gas (GHG) emissions from land use change, the carbon footprint of food produced, but not eaten, is estimated to be the third top emitter of carbon dioxide, after the United States and China. Furthermore, the bluewater footprint—that is, the consumption of surface and groundwater

<sup>138</sup> Asia Pac J Clin Nutr, Waste Management to Improve Food Safety and Security for Health Advancement, 18(4), 2009, Print, at pp. 538-45.

<sup>139</sup> London, Canada. A Road Map to Maximize Waste Diversion in London: Planning our Destinations to Substantially Reduce Garbage, 2007, Print, at p.11, 36.

resources—is 250km<sup>3</sup>. Finally, the food produced but not eaten occupies close to 1.4 billion hectares of land; this is approximately 30% of the world’s agricultural land area.<sup>140</sup>

Unfortunately, the needs for environmental protection from waste generation are often overlooked, and there is a lack of knowledge about how the environment and health effects are impacted by the ways waste is managed, and this creates both food security and safety challenges.<sup>141</sup>

### ***Food Waste in Middlesex-London***

In Middlesex-London, the London Environmental Network (LEN) serves to create a more organized way of getting environmental related messages to the public, so that significant progress can be made in the environmental issues facing London, Ontario. Currently, LEN has five groups working to promote waste reduction, recycling, and composting in the city. The five groups include EnviroWestern, Goodwill Industries- Ontario Great Lakes, Sustainability at Fanshawe, Sustainability at Western University and Thames Region Ecological Association.

### ***Waste and Recycling***

Middlesex-London currently has a garbage and recycling program in place; however, the means by which the programs operate are different amongst the municipalities. The City of London currently operates on a six-day schedule in which curbside garbage and recycling is collected. In the downtown core, garbage is collected twice weekly. The city enforces a limit of four garbage bags per pickup for residential properties and 12 bags per collection for businesses.<sup>142</sup>

Within Middlesex County, Bluewater Recycling Association serves Adelaide-Metcalf, Lucan Biddulph, Middlesex Centre, North Middlesex and Strathroy-Caradoc for their recycling and garbage pick up. Adelaide-Metcalf, Lucan Biddulph, Middlesex Centre and North Middlesex have their garbage and recycling picked up on a weekly basis and are limited to 45 pounds for their waste pickup (there is no noted limit for Lucan Biddulph). Strathroy-Caradoc has their waste picked up weekly, and their recycling picked up biweekly. Like Lucan Biddulph, there is no noted limit on the amount of garbage that can be picked up curbside.<sup>143</sup>

The Village of Newbury currently has their recycling and waste collection services being contracted through BFI Canada. Waste is picked up weekly, with a four bag limit, and recycling is picked up biweekly.<sup>144</sup> Lastly, Southwest Middlesex has a contract with EMTERRA Environmental in which their garbage and recycling is picked up once a week, with a 45-pound

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<sup>140</sup> Food and Agriculture Organization of the United Nations, *Food Wastage Footprint Impacts on Natural Resources*, 2013.

<sup>141</sup> No author. *Waste Management Resources*, No Date, Web, at <http://www.wrfound.org.uk>

<sup>142</sup> London, Canada, “Information About Garbage Collection,” No Date, Web, at <https://www.london.ca/residents/Garbage-Recycling/Garbage/Pages/Garbage%20FAQs.aspx>

<sup>143</sup> Bluewater Recycling Association, “Community List Search,” No Date, Web, at <http://bra.org/listindex.html>

<sup>144</sup> Newbury, *Newbury Garbage Disposal Rules and Guidelines*, No Date, Web, at <http://newbury.ca/by-laws.html>.

limit.<sup>145</sup> Waste pick-up through Middlesex-London does not include organic waste pick-up through a green bin program.

### **Organic Waste**

In 2011, 61% of Canadian households, and 75% of Ontario households, participated in some form of composting. In Ontario, 62% of households composted kitchen waste and 82% composted yard waste.<sup>146</sup>

#### **Community Harvest**

A community initiative that serves to reduce the amount of food that is wasted prior to entering the market. The London Food Bank has developed relationships with many local farmers, and offered them the opportunity to donate fruits and vegetables that have been deemed unsalable. This produce, still nutritious, is then donated to residents in need. In 2012, 100,000 pounds of fresh, local fruit and vegetables were donated through this program. Harvest Mobs are another opportunity to reduce food waste, where volunteers of the London Food Bank visit local farms and harvest surplus produce.

(Source: London Food Bank, "Community Harvest," 2016, <http://www.londonfoodbank.ca/about-us/fresh>)

There are no scheduled curbside collection services for separate organic materials anywhere in Middlesex-London. Bluewater Recycling Association, which serves most of Middlesex County, encourages residents to use a backyard composter or a digester to manage organic waste, noting that managing materials as close to the source as possible is typically a best practice from an economic and environmental perspective.<sup>147</sup> Backyard compost bins are available to residents of Middlesex County at the Middlesex County Improvement Authority.

The City of London participates in backyard composting, rather than curbside collection. Residents can purchase backyard composters through two EnviroDepots, local hardware stores, and garden centres. "Road Map 2.0: The Road to Increased Resource Recovery and Zero Waste for the City of London," indicates that in 2014 and 2015 the City will explore source reduction of food waste and examine the role of community composting. From 2016 to 2019 the plan in terms of composting food waste is to increase home composting opportunities. This report also shows waste audits that suggest there is an approximate 45% (or 26,000 tonnes) of compostable material in the curbside garbage that is currently being collected. A curbside

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<sup>145</sup> Southwest Middlesex, "New Recycling & Garbage Collection Schedule," 2014, Web, at [http://www.southwestmiddlesex.ca/Public/Page/Files/65\\_2014\\_2015\\_RecyclingAndGarbageCollectionCalendarSWM\\_11x17%20EMTERRA%20%20final%20copy.pdf](http://www.southwestmiddlesex.ca/Public/Page/Files/65_2014_2015_RecyclingAndGarbageCollectionCalendarSWM_11x17%20EMTERRA%20%20final%20copy.pdf).

<sup>146</sup> Statistics Canada, "Composting by Households in Canada," 2013, Web, at <http://www.statcan.gc.ca/pub/16-002-x/2013001/article/11848-eng.htm#a3>.

<sup>147</sup> Bluewater Recycling Association, "Organic Waste," No Date, Web, at <http://bra.org/municipal/adelaidemetcalfe/organic.html>.

Green Bin program would divert approximately 12,000 to 14,500 tonnes (45% to 55% of compostable waste) and increase overall waste diversion by 8% to 9%.<sup>148</sup>

While there is no citywide composting program in London, home/backyard composting has played an important role in waste reduction in the city since the mid-1990s. In terms of composters provided to residents, the City of London has sold subsidized home composters to residents. In 1995 to 1999 approximately 53,000 subsidized composters were sold, and since 2007, 250 units are sold per year (creating an approximate total of 1,250 home composters sold).<sup>149</sup> Residents of London who do participate in composting, but do not wish to compost in their backyard, can drop off their organics to the Clarke Road EnviroDepot.<sup>150</sup>

The City of London is far behind other Census Metropolitan Areas when it comes to the amount of kitchen waste that they compost. Statistics gathered through the 2011 Households and the Environment Survey shows that out of selected CMA's in Ontario, the number of London households who compost kitchen waste is the second lowest amount at merely 33% of households. Guelph had the highest number of households composting kitchen waste at 79%.<sup>151</sup>

**Table 37: Composting in Selected Census Metropolitan Areas in Ontario (Source: Households and the Environment Survey, 2011)**

Census Metropolitan Area	Composted Kitchen and/or Yard Waste (%)	Composted Kitchen Waste (%)	Composted Yard Waste (%)
Ottawa- Gatineau (Ontario part)	76	63	85
Kingston	83	70	83
Oshawa	80	72	86
Toronto	76	71	89
Hamilton	72	68	78
St. Catharines – Niagara	82	69	77
Kitchener – Cambridge –Waterloo	70	54	85
Brantford	65	32	82
Guelph	87	79	93
London	68	33	83
Windsor	77	31	81
Barrie	74	59	76
Greater Sudbury	69	59	76
Thunder Bay	68	35	72

<sup>148</sup> London, Canada, Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste, 2013, Print, at p.31.

<sup>149</sup> London, Canada, Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste, 2013, Print, at p.32.

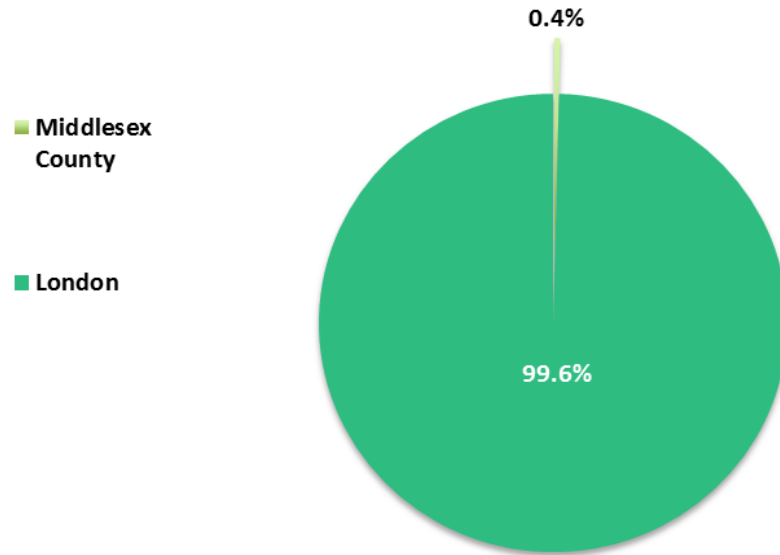
<sup>150</sup> London, Canada, Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste, 2013, Print, at p.33

<sup>151</sup> Statistics Canada, "Composting by Households in Canada," 2013, Web, at <http://www.statcan.gc.ca/pub/16-002-x/2013001/article/11848-eng.htm#a3>.



Middlesex-London diverts approximately 2% of all of Ontario’s diverted organic waste. Of Middlesex-London’s diverted waste, London makes up almost 100% and Middlesex less than 1%. Despite Middlesex having a population of roughly 20% of the Middlesex-London area, it diverts less than 1% of the total organic waste.<sup>152</sup> It is not clear through Waste Diversion Ontario whether the large difference in percentages is due to population density differences, composting behaviours, or inconsistent reporting methodologies.

**Figure 48: Percentage of Organic Waste Diverted (Waste Diversion Ontario Program Data, 2013)**



In 2011, in Southwest Middlesex, 25.6% of all waste is diverted; of this 25.6%, 3.64% of residential waste diverted was organic waste (approximately 3.2 kg). London diverts 42% of its residential waste (65,945.23 tonnes/ 169.49 kg). Of all waste, 12.42% is diverted as organic waste (approximately 21.25 kg). Among other large urban centres in Ontario, the average percentage of waste diverted (vs. disposed) is 50%.<sup>153</sup> While data on the percent of diverted waste and diverted organic waste, as a total of all diverted waste, was not available for the other municipalities in Middlesex County, this data shows that London does not divert nearly as much of its waste as other urban centres in Ontario; therefore, opportunities to increase waste diversion may be in need of implementation.

<sup>152</sup> Waste Diversion Ontario, “Program Data,” 2013, Web, at <http://www.wdo.ca/partners/municipalities/municipal-datacall/>

<sup>153</sup> Waste Diversion Ontario, “Residential GAP Diversion Rates,” 2011, Web, at <http://www.wdo.ca/partners/municipalities/municipal-datacall/>

**The Southern Ontario Food Collaborative** encourages families to eat well and reduce food waste by bringing together government of all levels, non-government organizations, food producers, food processors/manufacturers, distributors and retailers and restaurants/ food services to take a food systems approach. Leadership, working together, and having multiple strategies with a shared, educational message inform the collaborative's strategy. The group was established in early 2015 and since has developed a steering committee, completed a strategic plan, an action plan, and currently has three working groups established.

(Source: Golden Horseshoe Food and Farming Alliance, January 30, 2015, <http://www.foodandfarming.ca/southern-ontario-food-collaborative-battles-food-waste-in-york-region>)

## 7.2 Gaps in Knowledge

In regards to organic waste diversion in Middlesex-London there is some information that is still needed to get a clearer picture on this topic. Data on the percent of diverted organic waste as a total of all diverted waste was not available for most of the municipalities in Middlesex County (with the exception of Southwest Middlesex). Without this data, we do not know the volume of diverted organic waste within each of the municipalities in Middlesex County, and therefore, cannot get a clear picture of total organic waste diverted in Middlesex-London. There is also no current data available that provides information on the composting behaviours of Middlesex-London residents, more specifically why some people compost and others do not.

There is also a lack of information on food waste that occurs outside of the home. Data regarding the amount of food wasted by producers, restaurants and supermarkets, fast food chains, processors, distributors etc. was not discussed in this section. It's important to reiterate that food is wasted across many areas of the food system and therefore, the issue of food waste is much larger than the household food waste data captures.

## 7.3 Strengths and Assets

While Middlesex-London does not provide curbside pick-up for organic materials, residents are engaging in their own efforts to reduce waste. For example, some residents still continue, despite the lack of curbside pick-up, to compost organic materials through their own means in their backyards or EnviroDepots (available to London residents). Some residents also engage in the practice of permaculture and use worms to compost their organic waste. Food waste can be minimized to a greater degree through having the people currently engaged in composting, encouraging, promoting, and demonstrating composting to their friends and family.





The London Food Bank's Community Harvest Program also works to reduce waste through partnering with farmers to donate their unsalable, yet nutritious, food. Middlesex-London could increase the amount of perishable and nutritious food available to those that cannot afford it by expanding this program to other food banks across the area. By leveraging the existing relationships with farmers, people in need will benefit, as the free food they receive will be

more nutritious than the items they would typically receive. This could increase the prevalence of healthy eating behaviours amongst residents.

Also, the London Environment Network has five groups that are working to promote waste reduction, recycling and composting in London. Community residents and staff noted that with these efforts, it appears there is a growing interest in reducing the amount of food that goes to waste in Middlesex-London.

Table 38 lists all of the strengths and assets identified through the community food assessment process that pertain to this section of the report (please see 1.2 for Asset Legend).

**Table 38: Strengths and Assets within Food Waste Management**

FOOD WASTE MANAGEMENT						
						
91. Community and residential composting						
92. Use of residential and backyard composting by residents						
						
93. Growing interest in reducing the amount of food wasted in Middlesex-London						
						
94. London Environmental Network						
95. London Food Bank Community Harvest Program						

## 7.4 Areas to Cultivate

Areas to cultivate exist within reducing the amount of waste produced in Middlesex-London’s food system. There are not enough opportunities aside from curbside garbage and recycling pick-up to reduce the amount of waste that is produced. While backyard composting is available, many people who do not have a backyard (common in urban areas) and/or transportation to an EnviroDepot do not have an opportunity available to them to compost organic waste. Additionally, there is no food waste program on the same scale as Second Harvest that collects donated and surplus food and gives it to those in need, rather than it going to waste. Middlesex-London residents and staff articulated that there is too much food left in and/or on farmers’ fields. Finally, Middlesex-London lacks a green bin program for composting and this was strongly voiced by community members in the survey.

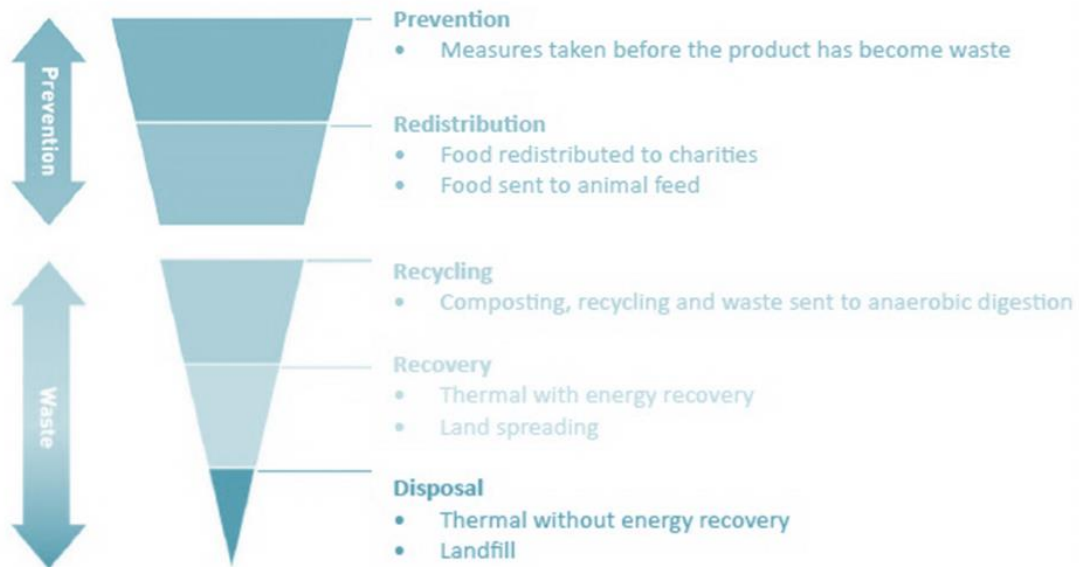
**Second Harvest** is the largest food rescue program in Canada. Second Harvest picks up donated, surplus food, which would otherwise go to waste, and delivers the food to community agencies in Toronto. The charity has been in operation since 1985 and currently delivers rescued food to over 220 social service agencies. They rescue and deliver enough food to provide over 22,000 meals a day!

(Source: Second Harvest, 2015, <http://www.secondharvest.ca/about>)

## 7.5 Opportunities for Change

The opportunities for food waste change in Middlesex-London exist on a hierarchy of waste recovery and management action. Two visualizations of this hierarchy—prepared by the UK Food Chain Centre (Figure 49) and the US Environmental Protection Agency (Figure 50) respectively—can assist the community in exploring which types of action and what it looks like should be prioritized for the area.

**Figure 49: Waste Management Hierarchy (Original Source: Waste Resources Action Programme, 2013)<sup>154</sup>**



In the community survey, residents were asked about their perspective on waste management. When asked whether they thought it was important that people in Middlesex-London recycle and compost food waste, 77% of respondents strongly agreed with the statement, and an additional 11% somewhat agreed (total of 88% respondents who agreed with the statement). The responses show that an overwhelming number of residents feel that recycling and composting food waste are important activities for the community to participate in.

<sup>154</sup> Sourced from: Nicoleta Uzea et al., “Developing an Industry Led Approach to Addressing Food Waste in Canada,” Provision Coalition, 2013.

“It is completely unacceptable that we do not have a system in place to properly dispose of compostable goods.”  
 – Survey respondent

Figure 50: Waste Recovery Hierarchy (Original Source: US Environmental Protection Agency, as cited in Business for Social Responsibility, 2012)<sup>155</sup>

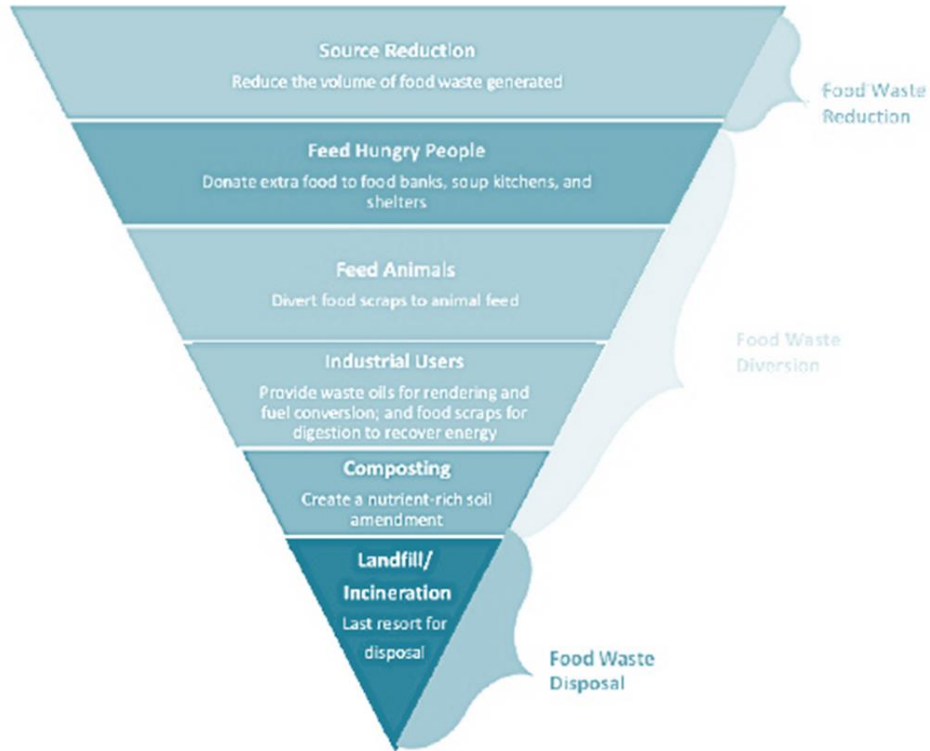
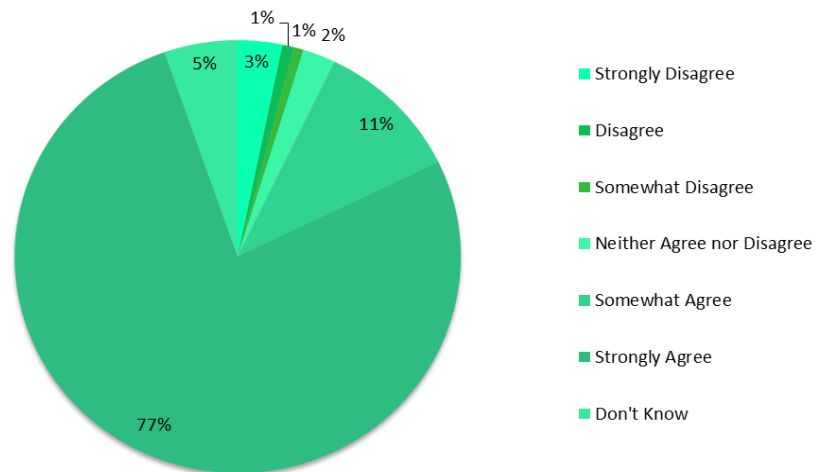


Figure 51: It is Important for People in Middlesex-London Recycle and Compost Food Waste



<sup>155</sup> Sourced from: Nicoleta Uzea et al., “Developing an Industry Led Approach to Addressing Food Waste in Canada,” Provision Coalition, 2013.

Through further consultation, Middlesex-London residents identified ways in which food waste management within their local food system could be strengthened. Many felt it was important that before any action is taken to reduce the amount of waste, that a clear indication of how much garbage (that could be diverted) was actually going to waste. This could happen through a quantification exercise using appropriate software. A local food hub was also identified as an opportunity to reduce food waste (e.g. through a central location to drop off organic waste, or as an opportunity to use composted material for farming). Additionally, the need to develop and implement a curbside composting program within London was mentioned countless times throughout the Community Food Assessment process. If this opportunity was not sought, it was also recommended that a compost awareness program be implemented to educate people on what can be composted and alternative ways to compost besides curbside pick-up (e.g. backyard composting or Clare Road EnviroDepot).

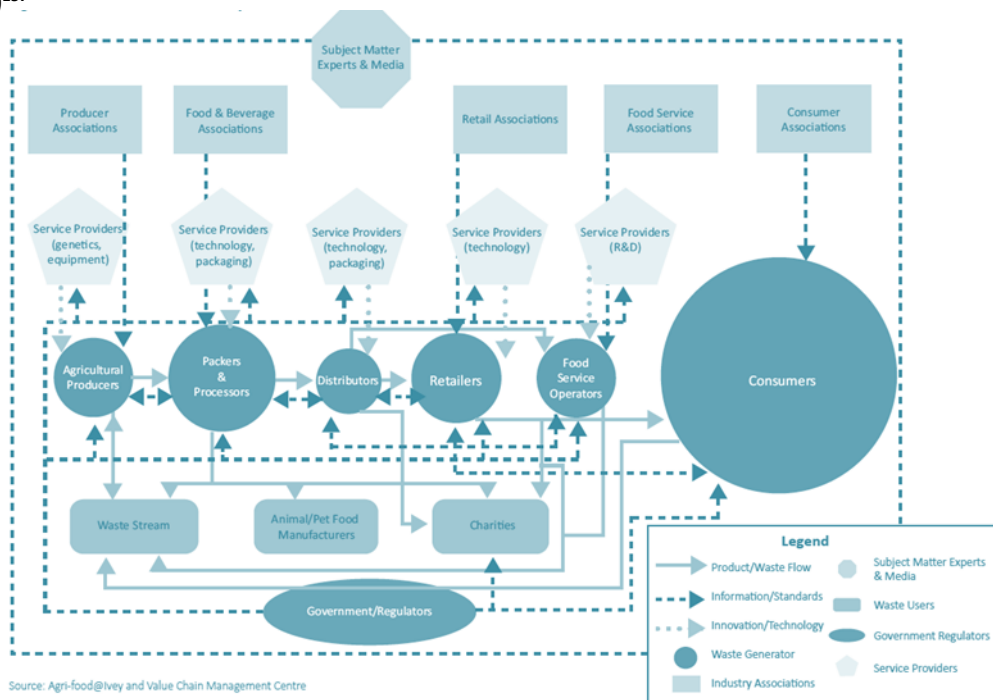
### ***Value Chain Approach***

The negative externalities associated with food waste are so large that they require a collective approach that has stakeholders collaborating towards greater economic, environmental, and social impact. The importance of working towards greater collective impact is underlined by the fact that food waste production and management involve so many unique stakeholders, who are not only responsible for food waste but also capable of responding to it. The Agri-Food@Ivey and Value Chain Management Centre have developed a food waste stakeholder map (Figure 52) that clearly identifies the causal relationships between the diversity of food system stakeholders across the food value chain and how this interrelates to food waste. The cyclical and self-production and management of food waste from within the food system that is captured in the stakeholder map affirms that a value chain approach to food waste is the only way to address this complex issue. By understanding and planning food waste management as a collective activity, the community will be able to maximize individual stakeholder efforts and create impacts that have a domino effect and accumulate in size.<sup>156</sup>

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<sup>156</sup> Nicoleta Uzea *et al.*, "Developing an Industry Led Approach to Addressing Food Waste in Canada," Provision Coalition, 2013, Print, at p. 14.

**Figure 52: Food Waste Stakeholder Map (Original Source: Agri-food@Ivey and Value Chain Management Centre)<sup>157</sup>**



### **Household Level Opportunities**

There are many other ways by which food waste can be minimized as well as at the household level. Researchers have studied household food waste behaviours, particularly what impacts the amount of waste generated, and have used this information to suggest opportunities that could help to minimize the amount of food that is wasted. For example, a study based in Europe, an area of the world where food waste is a much more widely studied topic than in Canada, looked at households’ behaviours (shopping, eating, and food preparation habits) and its influence on the generation of food waste. Through studying the behaviours of consumers, researchers were able to identify specific activities that would minimize the amount of food waste by those individuals. It was identified that the most often the food that is thrown away are fruit, vegetables, bread and cheese and were typically wasted (40% of the time) because the food was “out of date,” “in fridge too long,” “smelt/tasted bad,” or “mouldy.”<sup>158</sup>

Initiatives in which people cook together as a group would help to decrease the amount of food that is wasted as people who cook solely for themselves (one person households), generate the most food waste. Communities with small shops and local markets and people growing their own food would also decrease the amount of food that is thrown away, as people who shop exclusively at large supermarkets generate the greatest amount of food waste.

<sup>157</sup> Nicoleta Uzea *et al.*, “Developing an Industry Led Approach to Addressing Food Waste in Canada,” Provision Coalition, 2013, Print, at p. 16.

<sup>158</sup> J. Jorissen, C. Priefer and K. Brautigam, “Food Waste Generation at Household Level: Results of a Survey Among Employees of Two European Research Centres in Italy and Germany,” *Sustainability*, 7, 2015.

Additionally, food literacy programming can also help to reduce food waste. Research shows that using a shopping list, meal planning, reuse of leftovers, and good time management all helped to reduce the amount of food that was wasted. The food preferences of children and teenagers also generates food waste, so a program such as Growing Chefs! where children are eager to try new food because they participated in the creation of them, may be useful in minimizing the amount of food that is wasted.<sup>159</sup> (Please see Section 10.1 for more information on Growing Chefs!).

The most common drivers for food waste mentioned in the study were oversized packaging (mostly for small households), poor quality of purchased groceries, cooking too much due to lack of experience, likes and dislikes of children, and lack of time for family management due to work overload; therefore, initiatives that target these drivers of food waste may be useful in Middlesex-London.<sup>160</sup>

### ***Government Supported Initiatives***

Industry led voluntary initiatives to reduce food waste that have been kick-started and strengthened by the support of local government have proven that legislation is not always the best means towards better food waste management.<sup>161</sup> In fact, industry can be incentivized by the internal cost-savings associated with reducing their waste. In a government-supported initiative in the UK that saw the Institute of Grocery Distribution and Cranfield University collaborating, it was found that “it is common for businesses to be able to reduce costs by 20% and increase sales by 10% through making improvements in the way their chains were managed.”<sup>162</sup>

#### **Allowing Industry to Lead the Way**

Begun well ahead of the UK recession, with a target of generating £1.1B (~ CAD\$1.78B) in financial benefits for industry and consumers by 2011 (WRAP, 2010b), the WRAP initiative began in earnest with the signing of the Courtland Commitment in 2005, an initiative to reduce packaging and waste through industry collaboration. With 12 initial signatories, by the end of ‘Phase One’ in March 2010, the Courtland Commitment had 42 signatories. Together the signatories represent 92% of the grocery retail sales and many of the world’s major brands. The agreement has resulted in a 670,000 tonne reduction in food waste and a 520,000 tonne reduction in packaging between 2005 and 2009. This was in spite of a 2% growth in the grocery sector each year.

Source: Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, at p. 8.

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<sup>159</sup> J. Jorissen, C. Priefer and K. Brautigam, “Food Waste Generation at Household Level: Results of a Survey Among Employees of Two European Research Centres in Italy and Germany,” *Sustainability*, 7, 2015.

<sup>160</sup> J. Jorissen, C. Priefer and K. Brautigam, “Food Waste Generation at Household Level: Results of a Survey Among Employees of Two European Research Centres in Italy and Germany,” *Sustainability*, 7, 2015.

<sup>161</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 8.

<sup>162</sup> Martin Gooch, et al., “Food Waste in Canada,” George Morris Centre, November 2010, Print, at p. 8.



This business case has proven to be a successful tool for driving industry-led change by the British Government's Waste Resources Action Programme (WRAP), mentioned above. WRAP UK is registered charity that works with industry, individuals and communities accelerate the transition towards a circular resource-efficient economy that re-invents how products are designed, produced and sold, re-thinks how these products are used and consumers, and re-defines their life-cycle through re-use and recycling.<sup>163</sup> This example and other best practices should be considered when planning future action to address the food waste problem and lack of waste management activity in Middlesex-London.

### ***Innovative Policy Change***

The regulatory environment that surrounds the food system ensures that food produced is safe for consumption and meets all the relevant marketplace standards; however, policy and legislation at the federal and provincial levels can also put pressure on stakeholders to remain in their industry or commodity silos, and this can have negative effects, including the production of food waste. For example, risk management programs and marketing regulations can limit how stakeholders communicate across the food value chain, all the way from farmer to consumer.<sup>164</sup> This can hinder the development of more progressive approaches to waste management, such as the value chain approach described above. Additionally, weak waste management regulation at both the provincial and municipal levels can have the negative impact of inadvertently encouraging both industry and the consumer to waste food or choose the waste recovery, reduction or management path of least resistance. This could include the dumping of organic waste in lieu of developing long-term higher technology solutions, such as introducing anaerobic digesters to breakdown biodegradable material and create energy that can be harvested.<sup>165</sup> Innovative policy change at the municipal level, which supports communication across the food value chain and a long-term vision for collective waste management in the area, can also help to create greater collective impact.

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<sup>163</sup> WRAP UK, "Our Vision," 2016, Web, at <http://www.wrap.org.uk/content/about-us>.

<sup>164</sup> Martin Gooch, et al., "Food Waste in Canada," George Morris Centre, November 2010, Print, at p. 7.

<sup>165</sup> Martin Gooch, et al., "Food Waste in Canada," George Morris Centre, November 2010, Print, at p. 7.

# 7.0 Food Waste Management

250

composters sold per year in London

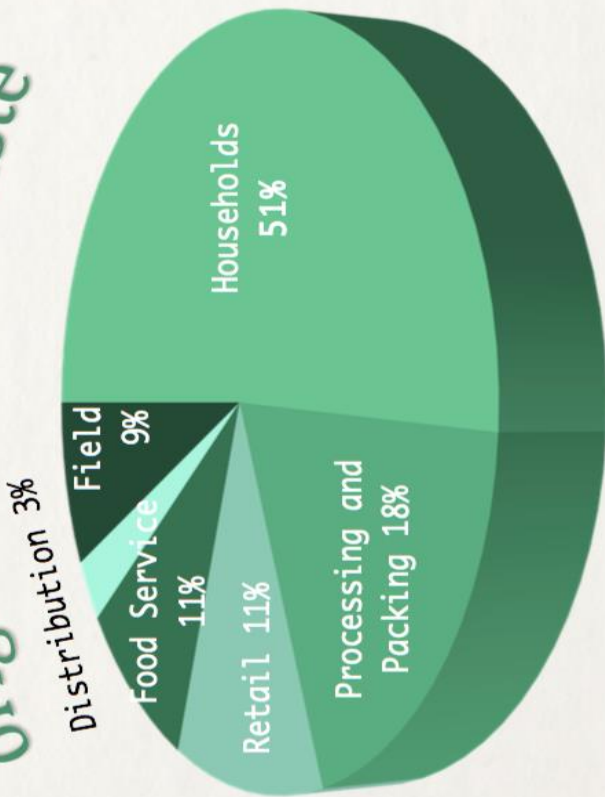
33%

of London households compost

26,000

tonnes of compostable material are not composted

## origins of food waste



WHY  
do some residents  
COMPOST?  
???

77%  
Strongly think it's  
important to recycle  
and compost food waste

100,000 lbs

of fresh, local fruit  
and vegetables  
donated



Waste in large urban centres in Ontario diverted as organic

Waste in London diverted as organic