







A Circular Strategy for Organics

Dctober, 2015



Every year in Ontario, over 9 million tonnes of valuable resources leak from our economy and this number has grown dramatically over the last two decades.

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The Canadian Biogas Association is the collective voice of the biogas sector, developing the biogas industry to its fullest potential through capturing and processing organic materials to maximize the utility and value inherent within that material. Our member-driven organization represents all facets of the biogas sector from owner/operators, technology suppliers, financial and learning institutions, utilities, waste industry and organic residual generators. We serve our membership by guiding policy and regulatory development, building industry knowledge through exchange of information, creating knowledge networks and supporting research, and raising the awareness of multiple environmental and societal benefits of biogas. More information can be found at www.biogasassociation.ca.



The Compost Council of Canada is the national non-profit, member-driven organization dedicated to advocacy and the advancement of organics residuals recycling and compost use. Founded in 1991. The Council serves as the central resource and network for the organics recycling and compost industry in Canada and, through its members, contributes to the environmental sustainability of the communities in which they operate. More information can be found at www.compost.org.



The Ontario Waste Management Association (OWMA) is the voice of the waste and resource management sector in Ontario. The OWMA represents over 275 members across the province including private sector companies; public sector municipalities and organizations and individuals involved in the waste management sector in Ontario. Together they manage over 85% of the province's waste. OWMA members have diverse interests and capital investments in areas such as waste and recycling collection, landfills, transfer stations, material recycling facilities, organics processing and composting. More information can be found at www.owma.org.

FOREWORD

Over the decade, our collective organizations have supported numerous studies and developed numerous reports into the need for action to address organic waste, which is the one of the largest components of our waste stream. This Report highlights much of the hard work done to-date and establishes a path forward for the government to embrace a circular economic approach to organic waste management – one that will generate economic growth, create well-paid jobs and meet environmental objectives.

In-roads have been made over the last decade by our members in substantially increasing the amount of organic waste being reutilized, yet much more work is necessary. This is not about simply diversion from disposal but driving value and quality from the output of these waste resources to enrich our crops and ensure the prosperity of our environment and economy.

However, without willing partners including the provincial and federal governments, further improvements will be unlikely. This is our vision and the concrete action necessary to drive it.

Recommendation 1: Articulate a long-term comprehensive (economic, social and environmental) strategy with goals to harness the inherent value associated with capturing and processing all organic waste and reducing food waste. Policies should incorporate these longer term objectives and reflect the waste hierarchy, by emphasizing and prioritizing reduction, reuse, recycling, and recovery. Create an inter-ministerial committee, with support from the federal government, industry and municipalities, to coordinate the implementation of the strategy and oversee the coherence of sectoral policies with the strategy.

Recommendation 2: Create a public awareness campaign to support broader public and business understanding of the need to reduce food waste, improve the capture of remaining organic wastes and increase the value of recycled organic products like compost, digestate, soil amendments and fertilizers.

Recommendation 3: Provide tax incentives and develop government procurement policies to avoid the creation of food waste through mechanisms like food donation programs.

Recommendation 4: Maximize public procurement for recycled organic residual products by requiring or at a minimum providing preferred purchasing in government projects or activities and identify incentives to increase organic residual management programs at all government agencies and institutions.

Recommendation 5: Provide greater certainty for the feed-in-tariff (FIT) program and Large Renewable Procurement process (LRP) to ensure markets for renewable energy generated from organic waste remain stable and predictable.

Recommendation 6: Encourage highest and best use of organic material through the potential use of disposal bans, disposal levies, and/or extended producer responsibility programs.

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Recommendation 7: Restructure the approvals and service delivery processes to reduce complexity and strengthen enforcement while ensuring environmental protection.

- Facilitate the use of standardized templates with common language and requirements.
- Review opportunities for the use of different forms of service delivery like Delegated Administrative Authorities or other arm'slength bodies to help achieve these goals.

Recommendation 8: Work with the organic waste management sector and other relevant sectors to establish a system with clear definition and metrics to better capture and publish data on organic waste generation, type, collection, processing, and end markets.

Recommendation 9: Ensure ongoing investment and funding is established for research and development to keep standards up-to-date, and harmonize standards with other provinces, where possible.

- Review regulatory odour limits and their odour management applicability for the waste management sector to ensure a consistent and effective approach.
- Require training for all organic waste processing facility operators.
- Review recycled end-use markets to determine market potential and the need for any additional or changes to current standards.

Recommendation 10: Require businesses and public sector organizations to recycle organic materials in a manner that reduces contamination and ensures high quality outputs.

Recommendation 11: Establish a working group of the province, municipalities and other stakeholders in the organics waste management sector to investigate the need for a more consistent and sustainable approach to how municipal wastewater systems regulate food waste discharges.

We look forward to working with the federal and provincial government and other interested parties in helping to "Rethink Organic Waste" in Ontario.

Sincerely,

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Rob Cook CEO, Ontario Waste Management Association

Jennifer Green, *Executive Director, Canadian Biogas Association*

Susan Antler Executive Director, Compost Council of Canada

Chapter 1 Introduction: A Circular Strategy for Organics

Every year in Ontario, over 9 million tonnes of valuable resources leak from our economy and this number has grown dramatically over the last two decades.¹ These resources are the waste created through our take, make and dispose pattern of consumption – a linear model that treats our resources and energy as limitless and disposal as inexpensive.

According to Statistics Canada, every year Ontarians generate over 12 million tonnes of garbage (enough to fill the Rogers Centre almost 16 times) with over three-quarters of it sent to disposal.² Almost 4 million tonnes of this waste is organic (see composition of Ontario's waste stream in Figure 1).³ This includes an estimated 30 percent of food waste lost along the value chain from farm to fork, or in other terms, \$12 billion of food loss every year.⁴ All of these lost resources represent a cost to our economy, society, and environment. The amount of organic waste generated in Ontario has also steadily increased. While a certain amount of waste generation is a natural part of any system, our linear approach is neither sustainable given our finite supply of resources, nor is it in our long-term economic interests.

What is needed is a circular approach to organic waste management whereby wastes are reduced and what remains is captured and returned as productive resource inputs into our economy. For organics this completes the carbon cycle, returning essential nutrients back to the soil for ongoing soil health and fertility. This approach represents an enormous opportunity for Ontario to drive value creation through a hierarchical approach to organic waste management: reducing food waste creation, reusing for human / animal consumption, recycling to to enrich and improve soil quality (compost or digestate) and recovering energy (see Figure 2).



Chapter 1 - Continued Introduction: A Circular Strategy for Organics



Figure 2. Sustainable Materials Management Hierarchy

Like recycling and reuse, the proper processing and use of organics, offers tremendous environmental and economic opportunities. From an environmental perspective, using compost as mulch, an amendment to soil, or as potting media can provide a habitat for beneficial soil fauna and microbes, decrease contaminants, improve water retention and conservation, decrease soil erosion and topsoil loss by improving soil structure, and reduce or eliminate the need for chemical fertilizers.

Although often overlooked, the importance of healthy soil is gaining increased attention as Ontario addresses the impacts of climate change, phosphorous loading in the Great Lakes and the depletion of organic content and nutrients in our soils. The importance of soil health has also been recognized by the United Nations' Food and Agriculture Organization (FAO) in its declaration of 2015 as the International Year of Soils.

Link with Climate Change

Proper organic waste management can also play a major role in the mitigation of greenhouse gas (GHG) emissions in a number of ways:

- Less food waste going to disposal means fewer GHG emissions associated with growing, manufacturing, transporting and disposing of food;⁶
- Diverting organics from disposal avoids potential methane emissions, even if biogas capture systems are in place;
- Using the biogas produced from organic wastes as a source of energy reduces the need for fossil fuel energy sources, such as coal, oil and natural gas;
 - Compost returns organic matter to the soil, diverting carbon dioxide (CO₂) from the atmosphere. According to the FAO, nearly 90 percent of the climate change mitigation potential of agriculture globally comes from soil carbon sequestration;⁷
 - Compost and digestate reduce the extraction of peat, an important sink for CO₂.

Chapter 1 – Continued Introduction: A Circular Strategy for Organics

Preserving Landfill Space

In addition to soil improvement and emission reductions, preserving landfill space is another important benefit of diverting organic material. This is especially relevant as available space in existing landfills becomes increasingly scarce and permitting and siting of new landfills becomes more difficult. Based on the 2008 fill rate, the remaining capacity in Ontario's 32 largest landfills is 25 years.⁸ Even though additional capacity has been developed and other capacity is currently in the approvals stage, there remains a continuing landfill capacity deficit in Ontario, which means that a significant amount of waste is being exported. Our dependency on foreign landfill capacity does not represent a sustainable framework, especially with ever-increasing waste generation and disposal rates.

Economic and Social Benefits

While the environmental advantages are readily recognized, organic waste diversion offers a number of economic benefits as well. It is not just the material or energy value of recycling organic waste that is beneficial, but also the business opportunities associated with integrating these recovered resources back into our local economy. The proper processing of organic waste into soil amendments enhances the ongoing sustainability of Ontario's agricultural sector, which employs nearly 158,000 people, and contributes \$8.1 billion in wages and salaries annually.⁹ A vibrant agricultural sector, in turn, supports farm suppliers and the food and beverage processing sector.

Applying compost to farmland as an amendment is an inexpensive method of improving soil health. It improves structure in all textures of soils from sand to clay, and increases the moisture holding capacity within the soil which can be critical during periods of drought in the growing season. These traits are all of an economic benefit especially given the high cost of planting and maintaining a crop in Ontario.

In a recent report, the Conference Board of Canada provided a conservative estimate that increasing our overall waste diversion rate to 60 percent could create close to 13,000 net new jobs in Ontario and increase our GDP by \$1.5 billion.¹⁰

Biogas production can generate a revenue stream for farms, industries and municipalities, create new jobs and attractive investment opportunities that leverage multiple economic and environmental benefits. Realizing the full potential of biogas development could lead to up to 1,800 separate construction projects with a capital investment of \$7 billion and economic spin-off of \$21 billion to the Canadian economy.¹¹

Chapter 2 Establish the Path Forward

In order to realize the full benefits of moving towards a circular economy for organics, the provincial and federal governments need to set a clear path forward and a strategy with long-term goals. This is absolutely necessary to facilitate investment and business confidence. This report provides the framework for them to do so.

While efforts to-date are noteworthy and important, they have largely been uncoordinated and have not created the policy drivers necessary for greater progress. Cooperation between departments (both provincial and federal) is often weak and prone to overlapping responsibilities that cause issues.

Cooperation across government is necessary to ensure a coherent regulatory approach. This should not be about picking technological winners or losers, but rather about pursuing outcomes like food waste reduction and higher value creation from organic wastes.

The strategy and its associated goals should be well-articulated both within and outside of government in order to drive progress and establish certainty. The Waste & Resources Action Programme (WRAP) in the United Kingdom is a good example of where this coordination is occurring.¹² WRAP has been very successful operating in the space between governments, businesses, communities, innovative thinkers and individuals – forging partnerships and developing initiatives. This includes a successful initiative to drive food waste reduction throughout the value chain entitled *Love Food Hate Waste*¹³ and numerous publications to support the use of valuable end markets for compost and digestate.¹⁴

Recommendation 1

Articulate a long-term comprehensive (economic, social and environmental) strategy with goals to harness the inherent value associated with capturing and processing all organic waste and reducing food waste. Policies should incorporate these longer term objectives and reflect the waste hierarchy, by emphasizing and prioritizing reduction, reuse, recycling, and recovery.

 Create an inter-ministerial committee, with support from the federal government, industry and municipalities, to coordinate the implementation of the strategy and oversee the coherence of sectoral policies with the strategy.

Recommendation 2

Create a public awareness campaign to support broader public and business understanding of the need to reduce food waste, improve capture of remaining organic wastes and increase the value of recycled organic products like digestate, compost, soil amendments and fertilizers.

Chapter 3 Stimulate Markets for Circularity

Although the diversion of organic wastes from disposal generates substantial economic, social and environmental benefits, disposal predominantly remains the least-cost management option. The true costs and benefits of organics management are not accurately or adequately accounted for in the current economic framework, which leads to unnecessary waste creation and a lack of resource reutilization.

A classic example in the agricultural sector is the continued predominance of low-cost peat and inorganic fertilizers.¹⁵ Instead of reutilizing nutrients through compost, digestate or other soil amendments, economic factors make it preferable to use harvested peat and inorganic fertilizers. As the amount of organic waste generated in Ontario continues to increase, the challenge for government is to introduce policies and programs

that change this dynamic.

This is not to say progress is not being made. Some ad hoc provincial policies have helped drive progress, including requirements for municipal leaf and yard waste programs, reduction of red tape for on-farm anaerobic digesters and feed-in-tariff pricing for biomass facilities. It is however important to note that the piecemeal approach to these policies have created their own set of issues which are still being dealt with.

Approximately half of the total population of Ontario now have access to Green Bin programs and Ontario experienced a 158 percent increase in the amount of organics collected from 2003 to 2012, which represents an average annual increase of 16 percent (Figure 3).¹⁶



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Chapter 3 – Continued Stimulate Markets for Circularity

The economics however still predominately favour a linear approach of take-make-dispose. In order to overcome this, policies (both regulatory and nonregulatory) are necessary to promote the value of organics processing and organic waste derived outputs (energy and material). The goal of these policies should be to promote 'circularity'.

These circular policies should achieve the following:

- Drive highest and best use by increasing the cost and/or convenience of disposal options; and
- Incent value-based markets through the use of tax exemptions or credits, mandatory public procurement requirements, energy rates, and/or environmental standards.

It is important to emphasize that these policies should:

- be in keeping with the waste hierarchy and provide a level playing field for all stakeholders;
- foster fair, open, and competitive markets to drive innovation and investment;
- require direct accountability for achieving environmental outcomes; and
- ensure proper oversight and enforcement.

Most successful jurisdictions do not employ just one mechanism but use multiple mechanisms in a progressive approach. As an example, a disposal ban could not be applied immediately as market signals have not already established the investment for processing capacity, the end markets for the products, or the feedstock streams to processing facilities.¹⁷

Recommendation 3

Provide tax incentives and develop government procurement policies to avoid the creation of food waste through mechanisms like food donation programs.¹⁸

Recommendation 4

Maximize public procurement for recycled organic products by requiring or at a minimum providing preferred purchasing in government projects or activities¹⁹ and identify incentives to increase organic residual management programs at all government agencies and institutions.

Recommendation 5

Provide greater certainty for the feed-in-tariff (FIT) program and Large Renewable Procurement process (LRP) to ensure markets for renewable energy generated from organic waste remain stable and predictable.

Recommendation 6

Encourage highest and best use of organic material through the potential use of disposal bans, disposal levies, and/or extended producer responsibility programs.²⁰

Chapter 4 Solutions to Legislative and Regulatory Barriers

Environmental regulation requires proper oversight to assess and address risk, and to ensure uniform application and enforcement of the law. Without these elements in place, environmental regulation can have a detrimental impact as the cost differential between those that are compliant and those that are not is widened, creating a dysfunctional competitive marketplace.

Recently, the Ontario Environmental Commissioner and the Auditor General have expressed concerns over the continued erosion of service delivery by the Ministry of Environment and Climate Change (MOECC) and their ability to provide effective oversight of the waste management sector, owing to a lack of sufficient resources and expertise in government to permit facilities.²⁷ These concerns are compounded by the fact that there are multiple ministries and levels of government with overlapping responsibilities that often work at cross purpose.²⁸

Proper Oversight

The current government oversight system is expensive, and at a time when government ministries, including the MOECC, are trying to reduce costs, the Commission on the Reform of Ontario's Public Services has recommended the government should explore different forms of service delivery through arm's-length bodies.²⁹ One example that has been found to retain government oversight, while at the same time reduce costs to taxpayers, improve regulatory outcomes and efficiency, and increase industry engagement, has been the use of Delegated Administrative Authorities (DAAs).

Under the DAA model, legislation is passed that establishes an accountability and governance framework between a ministry and a private not-for-profit corporation, which then administers legislation on behalf of the government. DAAs



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Chapter 4 - Continued Solutions to Legislative and Regulatory Barriers

have been used to deliver a number of regulatory services since their inception in the mid-1990s. Unlike government, DAAs have the ability to invest in specific expertise and resources through recovery of costs directly from the regulated community to ensure adequate oversight with uniform application, interpretation and enforcement of regulations.

Reducing Complexity

Another issue with Ontario's regulatory environment for organics management is the system of permitting and approvals for infrastructure. The approvals process for waste management projects has evolved over many years and has become progressively more expensive and time-consuming both for applicants and MOECC staff. The increased process complexity is not contributing directly to improved environmental protection; too much time is spent by both applicants and the MOECC on activities which are. at best, unproductive and, at worst, reduce the MOECC's capacity to enhance environmental protection. Through a series of changes (many of which are simple), the process of reviewing applications and issuing environmental compliance approvals, or amending existing approvals, can be accomplished much more efficiently while improving environmental protection - More Protection, Less Process.

The sector has supported Ontario's implementation of the Environmental Activity and Sector Registry (EASR) which is a public, web-based system where people/companies engaging in certain activities will be required to register the activity and meet eligibility and operating requirements set out in regulation rather than seeking an approval through the normal application submission and review process. Although, it does not necessarily fit for organic waste management facilities, it provides an alternative path that focuses on environmental protection while reducing unnecessary resources and complexity for both the government and industry.

Despite some progress, approval timelines still remain unacceptably long and costly, both for low and high risk projects.

Recommendation 7

Restructure the approvals and service delivery processes to reduce complexity and strengthen enforcement while ensuring environmental protection.

- Facilitate the use of standardized templates with common language and requirements.
- Review opportunities for the use of different forms of service delivery like Delegated Administrative Authorities or other arm'slength bodies to help achieve these goals.

Chapter 5 Better Information, Better Decisions, Better Outcomes

A key driver for organics processing and product creation is the availability and quality of the feedstock. Understanding what feedstocks are being processed and the quantity available for processing are among the most important questions to consider when planning for the growth of the industry. Unfortunately, in Ontario, there is generally poor data collection and availability on feedstock (organic waste) generation and diversion, with the exception of residential organic waste diversion. Lack of data and inconsistency in existing data – or the means of getting it – makes it extremely difficult to plan for the future and is one of the major barriers for Ontario moving forward.

Data Collection

Without good data on organic waste generation and composition, it is difficult – if not impossible – to properly measure outcomes, assess risk, inform policy decisions, and invest in new or expanding infrastructure. For example, it may not be possible to make an accurate determination of the size and type of equipment needed at a facility and space requirements if there is no reliable data on the quantity and quality of the inputs. Due to these uncertainties, potential investors may avoid investing in a facility that may or may not be successful. Part of the problem is the current difficulty for governments in collecting and managing data, especially from the non-residential sector. While most in the industry are already required to report on the types and volumes of materials they process, the data is currently not in a format that is easily collated.

Recommendation 8

Work with the organic waste management sector and other relevant sectors to establish a system with clear definition and metrics to better capture and publish data on organic waste generation, type, collection, processing, and end markets.²⁶



Chapter 6 Improve the Value of Products & the Functioning of Facilities

Across the industry, it is becoming increasingly evident that the effectiveness of, and sustainability of diverting organics from disposal, depends upon the establishment and maintenance of stable end-use markets. This, in turn, requires building confidence in consumers and among farmers as to the quality and contents of compost products. This is where standards have a very important role to play.

Like economic instruments and policies and programs that promote organic waste reuse, uniform standards are an essential element for the growth and sustainability of end markets that support organics recycling. In addition to establishing stable end markets, standards can drive value creation and ensure a level competitive playing field amongst generators and processors, whilst ensuring protection of human health and the environment.

Background

The absence of standards has in the past led to considerable problems. Odour issues, along with a lack of transparency surrounding the movement of materials, and poor quality end products had negative impacts across the sector.

Much progress has been made in the sector to address these issues. In 2012, the Ontario Ministry of Environment released a Guideline for the Production of Compost in Ontario as a companion to the Ontario Compost Quality Standards. The Guideline, which replaced the Interim Guidelines for the Production and Use of Aerobic Compost in Ontario (first released in November 1991, and updated in 2004), sets out best practices for composting facilities in areas such as feedstock management, operating procedures during each stage of material handling, operational flexibility and optimization, and prevention and control of potential adverse effects, such as odor.

There has also been work by the organics sector to create the Compost Quality Alliance²¹, by the Compost Council of Canada, as well as other best management practice efforts.

The work around standards is not unique to Ontario or Canada. Efforts are underway in jurisdictions around the world that offer lessons and guidance for the province moving forward. For example, the European Compost Network launched the European Quality Assurance schemes (ECN-QAS) in July 2010, which among other things contains requirements for compost quality assurance organizations, as well as basic processing requirements for the production of composts. The European Union (EU) has also announced its intention to define an End-of-Waste Standard for compost, which would regulate the point at which compost ceases to be waste.

Standards should always be based on sound science, not perception. There is much to be gained by adopting relevant approaches from these more experienced jurisdictions and learning from their successes and failures. Unfortunately few resources are currently allocated by government to coordinate with other jurisdictions or support research and development that is

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necessary to keep these standards up to date and to provide for ongoing innovation.

Implementing Standards

Better coordination is also necessary across the country and within the province when it comes to setting standards for the processing and/or use of organic waste materials (i.e., animal feed, fertilizer, compost, digestate, biosolids, unprocessed organics, direct application sludge). Disjointed standards, combined with inconsistent application of the rules, allow for compliance loopholes and inconsistent outcomes. This negatively impacts the entire system.

It is also important to note that standards should not necessarily be based on a one-size-fits-all approach. Different products and uses may very well require different standards to appropriately manage risk. This was the concern in relation to the Compost Quality Standards and their impact on the use of a less mature compost for agricultural purposes.²² It is also a concern as it relates to the use of compost materials at brownfields sites.

From an operational perspective, there is a need to address the ongoing challenges of the application of province's odour guidelines (1 odour unit limit). There are many challenges in using this guideline and the manner in which it is applied or enforced doesn't always address some of the root causes related to odour issues. Odour from organics facilities is a continual friction point for the Ministry, business and communities. There is a need to review how the province manages this important but also subjective environmental aspect to ensure there is equal weighting to both the prevention as well as mitigation of odours; that operational limits imposed through approvals are consistent and effective; that odour limits established are achievable, representative, and ultimately not an impediment to value creation.

As municipal densification continues, these frictions will continue to rise. More balanced requirements for operator training and ongoing testing/analysis or additional mitigation could have a greater impact than the main focus being on the latter. Public education and outreach on the benefits or organics diversion should also be considered which, in turn, may create an improved climate of understanding and acceptance of organics processing facilities and the benefits they contribute to the future of our society.

Although there is no one solution for any given challenge and no foolproof system, standards from an operational or end-product perspective are important to the process of ensuring that the value of organic waste can be realized.

Clean Feedstock

Inputs into facilities also have a profound impact on outputs. While it is not always possible or practical basic source separation of organic wastes increases the amount of materials available for processing and results in the cleanest feedstock for processing resulting in best quality outputs. A

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clean and reliable feedstock supply is fundamental to profitable organic waste management.

Feedstock quality is important for all processing facilities (animal feed, rendering, anaerobic digestion, composting, and other recycling streams), but not enough is currently done in Ontario to ensure the quality of feedstock through source separation. This is not to say that depacking needs to happen onsite.

The delivery of onsite systems that deliver organic wastes directly to the wastewater system are a growing area of concern for many in the sector. These technologies, while providing a convenient method of disposal have the potential of creating burdens on municipal wastewater systems and infrastructure, producing a highly contaminated product and impacting collection economies of scale. Municipalities to-date have taken a piecemeal approach to regulating these activities.

Recommendation 9

Ensure ongoing investment and funding is established for research and development to keep standards up-to-date, and harmonize standards with other provinces, where possible.

 Review regulatory odour limits and their odour management applicability for the waste management sector to ensure a consistent and effective approach.²³

- Require training for all organic waste processing facility operators.²⁴
- Review recycled end-use markets to determine market potential and the need for any additional or changes to current standards.

Recommendation 10

Require businesses and public sector organizations to recycle organic materials in a manner that reduces contamination and ensures high quality outputs.²⁵

Recommendation 11

Establish a working group of the province, municipalities and other stakeholders in the organics waste management sector to investigate the need for a more consistent and sustainable approach to how municipal wastewater systems regulate food waste discharges.



APPENDIX

- Statistics Canada. Waste Management Industry Surveys: Business and Government Sectors. Available at http://www5.statcan.gc.ca/olccel/olc.action?objId=16F0023X&objType=2&lang=en&limit=0.
- 2 Statistics Canada. Waste management industry: Business and government sectors, 2012. Available at http://www.statcan.gc.ca/dailyquotidien/150610/dq150610a-cansim-eng.htm.
- 3 2cg. Ontario Organic Waste Management Report: 2013-2033, 2013.
- 4 Provision Coalition. *Developing an Industry Led Approach to Addressing Food Waste in Canada*, 2014. Available at http://vcm-international.com/wpcontent/uploads/2014/07/Addressing-Food-Waste-in-Canada-REPORT-July-2014.pdf.
- 5 Ontario Government. Waste Reduction Strategy, 2013. Available at http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2013/ 011-9262.pdf.
- 6 The United States Environmental Protection Agency (U.S. EPA) in a 2009 report highlighted that approximately 42% of U.S. greenhouse gas emissions are associated with the energy used to produce, process, transport, and dispose of the food we eat and the goods we use.
- 7 FAO. Climate change talks should include farmers: Agriculture in developing countries could play crucial role in mitigating greenhouse gas emissions, 2009. Available at http://www.fao.org/news/story/en/item/11356/icode/
- 8 Office of the Auditor General of Ontario. 2010 Annual Report Section 3.09: Non-hazardous Waste Disposal & Diversion. Available at http://www.auditor.on.ca/en/reports_en/en10/309en10.pdf.
- 9 Ontario Federation of Agriculture. Study shows value of Ontario's agri-food economy, 2013. Available at http://www.ofa.on.ca/media/news/study-showsvalue-of-ontarios-agri-food-economy.
- 10 Conference Board of Canada. Opportunities for Ontario's Waste: Economic Impacts of Waste Diversion in North America, 2014. Available at http://www.conferenceboard.ca/e-library/abstract.aspx?did=6233.
- 11 Kelleher Environmental. Canadian Biogas Study: Benefits to the Economy, Environment and Energy, 2013. Available at http://www.biogasassociation.ca/bioExp/images/uploads/documents/2013/r esources/Canadian_Biogas_Study_Summary.pdf.
- 12 More information on WRAP can be found at http://www.wrap.org.uk/content/about-us.
- 13 More information on Love Food Hate Waste can be found at http://www.lovefoodhatewaste.com/.
- 14 More information on the documents WRAP has developed for farmers can be found at http://www.wrap.org.uk/content/farmers.
- 15 The UK has recently moved forward with reducing the use of horticultural uses of peat (http://webarchive.nationalarchives.gov.uk/20130822084033/http://www.def ra.gov.uk/corporate/consult/peat/101217-peat-condoc.pdf) and the Environmental Commissioner of Ontario has also raised concerns with

regards to peat extraction (http://www.ecoissues.ca/index.php/Peat:_An_Unmanaged_Natural_Resourc e%3F)

- 16 Waste Diversion Ontario. 2012 Organics Trends (Residential), 2014. Available at http://www.wdo.ca/files/6213/8997/4569/2012_Organics_Residential.pdf
- 17 Hyder Consulting. Australia Department of Sustainability, Environment,

Water, population and Communities. Landfill Ban Investigation, November 2010. Available at

http://www.environment.gov.au/wastepolicy/publications/landfill-ban.html.

- 18 A recent tax example is the non-refundable income tax credit for farmers who donate agricultural products to eligible community food programs in Ontario, including food banks - http://www.fin.gov.on.ca/en/credit/cfpdtc/. Ontario's Good Samaritan Law (An Act Respecting the Donation of Food, Ontario 1994) also protects donors who give food in good faith from liability. The U.S. Federal Food Donation Act of 2008 specifies procurement contract language encouraging Federal agencies and contractors of Federal agencies to donate excess wholesome food to eligible nonprofit organizations http://www.gpo.gov/fdsys/pkg/BILLS-110s2420enr/pdf/BILLS-110s2420enr.pdf.
- 19 As an example, the US EPA makes recommendations to purchasing agencies for fertilizer and compost made from recovered organic materials http://www.epa.gov/epawaste/conserve/tools/cpg/products/landscaping.ht m.
- 20 The Ontario Waste Management Association's policy paper on disposal bans, levies and extended producer responsibility can be found at http://www.owma.org/Publications/OWMAReportsandPolicies.aspx. For organics, EPR programs would only make limited sense as a policy tool for 'branded organics' such as diapers, tea bags, disposable wipes and tissue.
- 21 More information on the Compost Quality Alliance can be found at http://www.compost.org/CQA-En.html.
- 22 Van der Werf, Paul. "Compost Standards Need Middle Ground," Solid Waste & Recycling Magazine, July 8, 2015. Available at http://www.solidwastemag.com/features/compost-standards-need-somemiddle-ground/.
- 23 A number of jurisdictions like British Columbia have completed similar reviews.
- 24 As an example, Alberta requires all compost facility operators to be certified. More information is available at http://esrd.alberta.ca/waste/wastemanagement-facilities/landfill-and-composting-facility-operator-certification .aspx.
- 25 As an example, Massachusetts requires businesses that create one ton or more of food waste a week to source separate and recycle those materials http://www.mass.gov/eea/agencies/massdep/recycle/reduce/food-wasteban.html
- 26 A recent report initiated by the Canadian Council of Ministers of the Environment identified data collection as an issue that needed to be addressed. The report can be found at http://www.ccme.ca/files/Resources/waste/wst_mgmt/State_Waste_Mgmt_i n_Canada%20April%202015%20revised.pdf.
- 27 Ontario Auditor General Annual Report, 2005. Available at http://www.auditor.on.ca/en/reports_en/en05/408en05.pdf & Ontario Auditor General Annual Report, 2009. Available at http://www.auditor.on.ca/en/reports_en/en09/408en09.pdf.
- 28 As an example is the Ontario's Brownfield's regulation which inadvertently restricts compost utilization in brownfield restoration projects because of regulatory limits.
- 29 Commission on the Reform of Ontario's Public Services, Public Services for Ontarians: A Path to Sustainability & Excellence. 2012. Available at http://www.fin.gov.on.ca/en/reformcommission/chapters/report.pdf.



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