



**Ontario Federation of Agriculture**

**Ontario AgriCentre**

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Ms. Shari Sookhoo, Senior Policy Coordinator  
Ministry of Environment and Climate Change  
Climate Change and Environmental Policy Division  
Resource Recovery Policy Branch  
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**VIA Email:** [shari.sookhoo@ontario.ca](mailto:shari.sookhoo@ontario.ca)

Dear Ms Sookhoo:

**Re: EBR Postings 012-5832 and 012-5834**

The Ontario Federation of Agriculture (OFA) has reviewed the two EBR postings indicated above and offers a number of comments below. Our comments are organized under the headings of:

- Waste
- Zero Waste
- Circular Economy
- Case Studies
- How the Bio-based Economy Fits
- Resource Recovery
- General Comments

OFA's analysis has rendered the following comments and recommendations:

- OFA applauds the government for aspiring to a “waste-free” economy such as is practiced on farms to ensure products are not wasted.
- OFA is cautiously watching the development of suitable streams for collecting and processing by-products.
- OFA believes these product streams will take a significant length of time to develop. There is a need to ensure neither Ontario farmers nor the rural communities they live in bear disproportionate or unnecessary costs in their development and operation. This will necessitate actual costs associated with zero-waste initiatives in rural Ontario being cost-shared with more densely populated, urban regions of the province.
- OFA is sceptical a zero-waste society can be realized in the near term, given our integration with a global economy that may not share this aspiration, as well as the affordability of the complete elimination of waste over a short period of time.
- OFA cautions that cost-benefit-analysis must be undertaken at virtually every step of the process of moving towards zero-waste.

- OFA strongly advocates for the inclusion of zero-waste costs in capital budgets set by the province and municipalities, and that zero-waste initiatives be dependent on available funding.
- OFA concurs that there are positive attributes associated with the concept of a circular economy.
- OFA is concerned the circular economy in rural Ontario will be very expensive to establish and operate and strain rural municipalities and the rural taxpayer.
- OFA questions why a definition of “producer” is not provided in Bill 151, particularly when the concept of ‘Full Producer Responsibility’ is a central theme of the Bill.
- OFA recommends that the concept of ‘retailer responsibility’ be explored as an option to ‘producer responsibility’.
- OFA believes that because all Ontario residents consume food on a daily basis, and all residents’ waste food, albeit at different levels, all costs associated with food waste reduction should be publicly funded.
- OFA strongly recommends the Ontario government invest in research, innovation and capital to further develop and strengthen the bio-economy as a necessary and pivotal element in moving to a waste-free Ontario.
- OFA suggests that lessons learned from other jurisdictions are informative: aspirational goals are no substitute for a comprehensive and well-considered plan based on sound cost-benefit analysis.
- OFA sees value in the emphasis that Bill 151 and the draft Strategy for a Waste Free Ontario places on resource recovery.
- OFA supports a concerted effort to recover phosphorus.
- OFA strongly recommends the Government of Ontario investigate and support research to develop technologies that recover P from sewage treatment plants and make it available for use in fertilizer formulation as a means of conserving present global reserves of P for future generations of farmers.
- OFA believes resource recovery is a critical component of a waste-free Ontario and needs to be pursued at every opportunity.
- OFA is supportive of moving Ontario towards a zero-waste economy, particularly the zero-waste-to-landfill component, because land having characteristics ideal for siting a landfill tend to mirror those of the most fertile, productive, cultivated land.
- OFA is concerned with the potential ramifications of Bill 151 and its associated regulations on farms and across rural Ontario.
- OFA is pleased that there are two regulatory provisions that provide some level of assurance distinctions have been recognized between high-density, urban areas and low-density, rural areas.
- OFA is prepared to work closely with the government on the specific ways and means of moving forward towards a waste-free Ontario.

### **Waste:**

The United Nations (UN) Statistics Division defines the term ‘waste’ as: “materials that are not prime products (i.e. products produced for the market) which the generator has no further use in terms of his/her own purposes of production, transformation or consumption, and which he/she wants to dispose. Wastes may be generated during the extraction of raw materials, the processing of raw materials into intermediate and final products and final products, the consumption of final products, and other human activities (UN 2014).”

The UN clearly characterizes waste as a product and as an anthropogenic phenomenon. This fits with the use of the word ‘waste’ within Bill 151, but it must be realized that the word ‘waste’ can also serve as a verb or an adjective.

Virtually all natural processes result in ‘products’ and ‘by-products’. However, the by-products of nature are often categorized as waste, just as they are if produced in an industrial or manufacturing setting influenced by human activity. For example, a carnivore, such as a coyote may not entirely consume its prey. That which is left over may be thought of as ‘waste’. However the ‘waste’ portion may serve as nourishment for a scavenger, such as a crow and, beyond that as products that enhance the soil. The notion of a product generating waste that is subsequently rendered into another product is an ecological process that the agricultural sector has replicated and improved upon for centuries.

Farmers routinely produce primary products and accompanying by-products, such as manure, corn stover, straw, etc. These by-products are not waste, but rather are inputs for alternative uses or for other biological processes. In this sense Ontario farmers are familiar with the notion of “waste-free” by ensuring by-products find alternative uses – that is they are not wasted. OFA applauds the government for aspiring to a “waste-free” economy such as is practiced on farms by ensuring products are not wasted.

However, the OFA is cautiously watching the development of suitable streams for collecting and processing by-products. OFA believes these product streams will take a significant length of time to develop. There is a need to ensure neither Ontario farmers nor the rural communities they live in bear disproportionate or unnecessary costs in their development and operation. This will necessitate actual costs associated with zero-waste initiatives in rural Ontario being cost-shared with more densely populated, urban regions of the province.

### **Zero Waste:**

The concept of zero waste is quite recent in a historical sense. Krausz (2012) traces the term to 1973 when an American chemist (Paul Palmer) founded Zero Waste Systems, a company specializing in the reuse of chemical by-products otherwise destined for disposal. The term gained popularity among environmental groups in the 1990s and appears to have been adopted as a municipal solid waste strategy by some jurisdictions in the late-1990s.

The literature indicates zero waste is a shift from a one-way, or linear system, to a closed loop, or circular system. This is the approach advocated in Bill 151 and the accompanying strategy document. Some authors advocate that “a sustainable society must be a zero waste society”.

OFA agrees with an aspirational move towards zero-waste. However, OFA is sceptical this can be accomplished in the near term, given our integration with a global economy that may not share this aspiration, as well as the affordability of instituting a comprehensive circular society over a short period of time.

OFA cautions that cost-benefit-analysis must be undertaken at virtually every step of the process of moving towards zero-waste. OFA strongly advocates for the inclusion of zero-waste costs in capital budgets set by the province and municipalities, and that zero-waste initiatives be dependent on available funding.

## **Circular Economy:**

The draft *Strategy for a Waste Free Ontario* begins with a section entitled “Circular Economy”. Moving toward a circular economy is positioned in the draft document as:

*“...a practical and progressive way to reduce greenhouse gas (GHG) emissions responsible for climate change, save scarce resources, create jobs, and capitalize on fiscal opportunities.” (p.5)*

OFA concurs that there are positive attributes associated with the concept of a circular economy.

The concept has been recognized by many sectors of the economy for quite some time, as noted above. The Ontario farm sector’s handling of livestock and crop by-products illustrates both the concept of circular economy and zero waste.

Our circular economy operates in a relatively small circle – typically within the farm itself or a small cluster of farms. The inclusion of other products from off the farm and across our economy expands the circle exponentially and complicates the process.

The farm community has established recycling programs for some of the purchased inputs necessary to conduct a farm business. Pesticide container, tire and bale wrap recycling programs have been developed to ensure these resources are not wasted via disposal in landfill or by burning. Such programs are not ubiquitous, however. The result is that some farmers who would like to participate in recycling do not have that opportunity. Access is dictated by the economics of pick-up.

The continuation and, indeed, expansion of waste reduction programs is necessary to ensure province-wide coverage and thus fulfil the circular economy and zero-waste aspiration.

However, economical recycling presumes relatively high density of available materials to ensure economies of scale. In other words: urban densities. OFA is concerned the circular economy in rural Ontario will be very expensive to establish and operate and strain rural municipalities and the rural taxpayer.

In this sense, the definition of “producer” of products and their responsibility for the life-cycle of that product is critical. The OFA questions why a definition of “producer” is not provided in Bill 151, particularly when the concept of ‘Full Producer Responsibility’ is a central theme of the Bill. We note the term “producer” was defined in the draft Waste Reduction Act (2013) that served as the foundation for Bill 151.

Producers are to be made responsible for the products (widgets and packaging) they provide. These producers must be prepared and able to spread the costs of recovery and re-use of their products across the whole Ontario economy.

Specific concerns for farmers with the concept of “producers” include the potential responsibility for food packaging and for organic (food) waste.

Increasingly, farmers, particularly those in the horticultural sector, are required to package farm products on the farm for distribution through retail. Farmers do not have and cannot gain any control of the packaging materials that are dictated by the retail buyer. In situations such as this, either the manufacturer of the packaging and/or the retailer must be deemed as the “producer” of the product and therefore accountable for its life-cycle.

In this regard, OFA recommends that the concept of ‘retailer responsibility’ be explored as an option to ‘producer responsibility’. This is entirely in keeping with the concept of responsible sourcing that many retailers have already embraced. Given that retailers are the link between consumers and the manufacturers of products, it may be more efficient and effective to require retailers to ensure that the products they market fit the requirements for reuse, recycling and recovery. There are far fewer retailers than there are manufacturers, which would reduce administrative costs significantly.

A significant amount of food is wasted in Ontario – in food service facilities, at retail and at home. Although farmers are the “producer” of the food they are not responsible for it being wasted and, therefore, should not be responsible for the management of the “waste”. OFA shares the public’s concern regarding food waste and is prepared to support efforts aimed at reducing the volume of food that finds its way into the waste stream. The OFA believes, however, that because all Ontario residents consume food on a daily basis, and all residents’ waste food, albeit at different levels, all costs associated with food waste reduction should be publicly funded.

### **How the Bio-based Economy Fits**

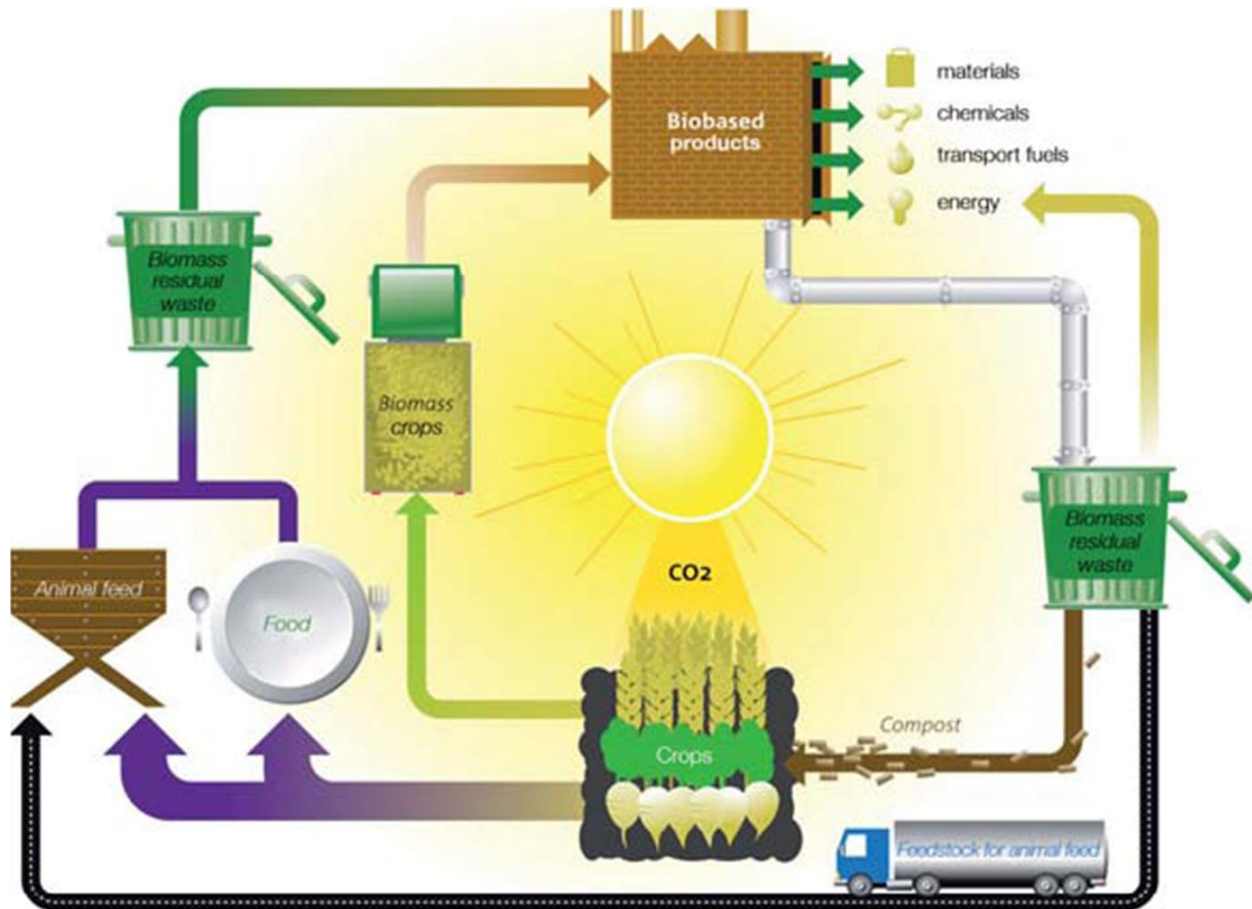
In 2012, the European Union announced its intention to pursue a circular economy (European Commission, 2012) and in so doing positioned a bio-based economy as the instrument that would enable transition to a circular economy. Zwier (2012) provides an excellent description of the circularity of the bio-economy:

- Solar energy is used by growing crops
- Crops are harvested and used as food for human consumption, livestock feed or biomass feedstock for bio-based products such as bio-materials (e.g. fabric and building materials), bio-chemicals (e.g. succinic acid and citric acid), transport fuels (ethanol), and energy (e.g. biogas)
- Biomass feedstock can also be derived from by-products associated with livestock rearing (e.g. manure), crop production (e.g. corn stalks) and food processing.

On this basis, the bio-based economy is defined as:

“...the production of renewable biological resources and the conversion of these resources and waste streams into value-added products, such as food, feed, bio-based products and bio-energy (Economic Commission, 2012).”

## Circularity of the Bio-based Economy



**Schematic Overview of Bio-based Economy**

An important component of this process that enhances the circularity is described as a cascading nature by Zwier et. al. (2015). In this regard, the original biomass is transformed to high value products (e.g. pharmaceuticals), with the waste stream from this process being subsequently used in the production of products having less value. The process of feeding waste-streams back into the process is repeated until the final stage, when, in the EU, the waste is incinerated to provide power energy within what is considered to be a closed-loop.

OFA has partnered with the bio-industry to develop Ontario's bio-based economy. OFA strongly recommends the Ontario government invest in research, innovation and capital to further develop and strengthen the bio-economy as a necessary and pivotal element in moving to a waste-free Ontario.

### Case Studies

Krausz (2012) took an in-depth look at zero-waste-to-landfill initiatives for Toronto, Canberra, Christchurch and San Francisco. We need to learn from this experience.

Toronto, Canberra, and Christchurch all abandoned their initiatives in advance of their target completion dates. The initiative in San Francisco is still underway but analysis by Krausz indicates it is unlikely to meet its target of zero waste to landfill by 2020.

Interviews conducted by Krausz were illustrative of reasons behind the failure to meet zero waste targets in Toronto. The City of Toronto embarked on a zero-waste-to-landfill initiative in 2001 when the Keele Valley Landfill in Vaughan reached its capacity and there was enormous opposition to opening a landfill for Toronto's garbage in Ontario.

Toronto Mayor Mel Lastman put forward the zero-waste concept. The timeline provided in 2001 was 100% diversion by 2010, but the Krausz (2012) thesis cites sources indicating there was never a plan by which zero waste would be achieved.

It was reported that no comprehensive plan was ever drawn up for reaching 100% diversion of waste from landfill because Toronto staff viewed that diversion rate as an aspirational goal, only (p. 168). A senior bureaucrat working at the provincial government level was also cited as saying zero-waste is a "notional objective" and "not achievable in an urban centre, at least not with the society we presently have" (p.160).

OFA suggests that lessons learned from other jurisdictions are informative: aspirational goals are no substitute for a comprehensive and well-considered plan based on sound cost-benefit analysis. A series of ad hoc policies and programs aimed at aspirational targets is not an acceptable approach, as history has demonstrated.

### **Resource Recovery:**

OFA sees value in the emphasis that Bill 151 and the draft Strategy for a Waste Free Ontario places on resource recovery. The mining of the 881 existing landfill sites for recoverable resources using state-of-the-art technology will lead to the discovery of organic and inorganic materials that can be reused / or recycled into feed stock materials for today's economy. It is also quite feasible that many of the over 1500 landfill sites that have been closed in the province could be mined. This would serve the dual purpose of conserving natural resources by recycling materials previously disposed of, and making available landfill space that may be required in the future.

OFA also supports a concerted effort to recover phosphorus (P). P is essential for food production, but is a finite resource with the available global supply dwindling at an alarming rate. In addition, P in our environment is known to be a contributing factor to eutrophication, a process that leads to algal blooms that impair surface water quality throughout the world, including the west basin of Lake Erie.

Approximately 85% of processed rock phosphate is used by the farm sector either as fertilizer for crops or as a mineral added to livestock rations. P is essential to supporting the life of plants and animals.

The recovery of P from sewage treatment plants has been a goal of city engineers for decades (Fattah, 2012). The science to recover P in a sewage treatment plant environment is well understood, but it was difficult to refine the process to the point that it was economically viable. Sewage treatment plants in Norway, the UK, Japan and Australia are successfully recovering P in the form of struvite - pellets of *monoammonium phosphate* (MAP) (Evans, 2007). For many years, MAP has been an important ingredient of granular fertilizer used by farmers.

A celebrated example of deriving nitrogen and phosphorus fertilizer from sewage is Kalundborg, Denmark, a seaside industrial town. Ehrenfeld and Gertler (1997) wrote almost 20 years ago that this town was avoiding the annual disposal of 1 million cubic metres of sewage sludge to either landfill or the ocean through a treatment process that rendered the fertilizer equivalent of 800 tonnes of nitrogen and 400 tonnes of phosphorus. In this case fertilizer is distributed to farms throughout the countryside using a system of pipelines and tanker trucks.

OFA strongly recommends the Government of Ontario investigate and support research to develop technologies that recover P from sewage treatment plants and make it available for use in fertilizer formulation as a means of conserving present global reserves of P for future generations of farmers. This action will have the additional benefit of reducing the discharge of P-rich municipal waste water to surface water resources, thus reducing the incidence of algal blooms.

OFA believes this notion of resource recovery is a critical component of a waste-free Ontario and needs to be pursued at every opportunity.

### **General Comments on Bill 151:**

OFA is supportive of moving Ontario towards a zero-waste economy, particularly the zero-waste-to-landfill component, because land having characteristics ideal for siting a landfill tend to mirror those of the most fertile, productive, cultivated land. Beyond that, farmers practice the concept of a circular economy on a day-to-day basis – using by-products as inputs to other biological processes – and urge others to do likewise.

However, as alluded to above, OFA is concerned with the potential ramifications of Bill 151 and the potential of associated regulations. The number of regulations permitted in Part IV of Bill 151 is long and complex and the potential for unintended consequences looms large. The best way to avoid the dilemma associated with poorly crafted regulations is to ensure that they are carefully developed in full consultation with all stakeholders, including the farming and rural communities. A carefully crafted implementation strategy, justified by cost-benefit analysis must be introduced only as quickly as is practical.

The OFA is pleased to see that Sections 103(1) does provide that:

“A regulation may be limited as to time or place, and may exclude any place from the application of the regulation.”

Similarly, Section 103(2) states that:

“A regulation may provide that different responsibilities in respect of resource recovery or waste reduction in different geographic regions of the province.”

OFA is pleased that there are two regulatory provisions that provide some level of assurance distinctions have been recognized between high-density, urban areas and low-density, rural areas.

Our aspirations cannot exceed our abilities to deliver cost effective waste reduction, resource recovery and recycling capacities.

The low population densities of rural Ontario must be considered in further developing recycling programs. “Producers” must be held full accountable for products and packaging, including all



imported products. We cannot bear the costs of offshore products and packaging being orphaned in Ontario. Likewise, the farming and agri-food sector cannot bear the threat to competitiveness that would arise if offshore competitors were not held to the same level of accountability for product life-cycle as our domestic industry.

OFA is prepared to work closely with the government on the specific ways and means of moving forward towards a waste-free Ontario. In doing so, our goal will be to ensure the farming and rural communities are not adversely affected.

Respectfully submitted,



Don McCabe  
President

Encl.

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