



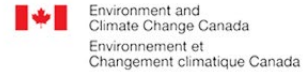
# From Vision to Action: Circular Solutions in Nova Scotia

July 2023

## Acknowledgements



IN COLLABORATION WITH



The National Zero Waste Council is a collaborative, leadership initiative of Metro Vancouver that brings together business, government, and the community to advance waste prevention and the circular economy in Canada.

[nzwc.ca](http://nzwc.ca)

Summary Report prepared by Understory Social Impact Consulting

# Background

The National Zero Waste Council, in collaboration with Circular Opportunity Innovation Launchpad (COIL), Halifax Regional Municipality, Halifax Food Policy Alliance, Divert Nova Scotia and others is leading **Circular Food Hubs: Mainland Nova Scotia**. This project provides support for the development of food hubs in mainland Nova Scotia that integrate circularity and food loss and waste (FLW) prevention. Circular food hubs in Nova Scotia will create additional anchors of activity in the Canadian landscape and contribute to the evolution of a Canada-wide circular food system.

A circular food system mimics natural systems of regeneration so that the materials currently wasted become a feedstock for another cycle. Circular food systems reduce food waste, promote good human health, protect ecosystems, increase market opportunities, and can deepen climate action. Circular food hubs bring this to life by connecting place-based stakeholders across the food system to take coordinated action that prevents food loss and waste. A circular food system may be constituted by multiple hubs of activity where circular solutions are co-located. While shared infrastructure may be part of these circular food hubs, co-located circular food solutions will look different from hub to hub and do not require shared infrastructure.



A core component of the Circular Food Hubs project in Mainland Nova Scotia is to continue developing a national network of peer leaders in food waste prevention and circularity – from British Columbia to Nova Scotia, coast to coast – where shared learnings and collaborative action advance food system change. The project uses a 5-step process designed by COIL. The first workshop was held in April 2023 and launched Step 1, convening stakeholders to set a shared circular vision. Following the workshop, a draft circular vision was shared broadly. This work was followed by a high-level food waste flow analysis to fulfill Step 2. The second workshop was held in July 2023, as part of Step 3, where the project brought regional food system participants together to identify strategic circular intervention opportunities. While it is expected that the vision will continue to evolve, Step 4 is beginning in September 2023 with the intention to pilot and test circular interventions in Nova Scotia.

# Workshop Overview

*From Vision to Action: Circular Solutions in Nova Scotia* was held in July 2023 and brought food system actors together from across Canada and within Nova Scotia.

The workshop included 56 participants in total, including business owners, local governments, and community leaders. Interest in attending this

workshop was significant, and many who could not attend due to conflicts and seasonal holidays continue to look for future opportunities to participate in the project.

The [workshop recording](#) is available on the National Zero Waste Council website.

**Date:** July 18th, 2023, 1:00 – 4:00 pm ADT

## Workshop Objectives:

1. Identify food loss and waste hot spots in Nova Scotia based on new waste flow analysis.
2. Gather feedback on recommended circular solutions.
3. Invite suggestions for solutions to pilot and test.
4. Feature Nova Scotian circular innovators.

Agenda	
1:00 - 1:10 pm	Welcome and Introductions
1:10 – 1:50 pm	Waste Flow Presentation & Circular Solution Recommendations: Dillon Consulting
1:50 – 2:00 pm	Circular Solution Spotlight: • David Messer, Circular Opportunity Innovation Launchpad
2:00 – 2:40 pm	Breakout: Feedback on Recommended Solutions
2:40 – 3:00 pm	Nova Scotia Innovator Spotlight: • Kerri Crowley, Oberland Agriscience Inc. • Sarah MacDonald, Farm to Feast Café
3:00 – 3:40 pm	Breakout: The Role We Play
3:40 – 4:00 pm	Share Feedback & Next Steps

# Confirming the Shared Vision

A shared vision for important elements of circular food hubs in Nova Scotia was developed based on discussion in the initial April 2023 workshop. The July 2023 workshop began by having participants reflect on the shared vision and provide feedback. Participants responded to three questions using the online survey tool Pigeonhole. The results are shown below.



## Question 1: Is there anything missing from this vision?

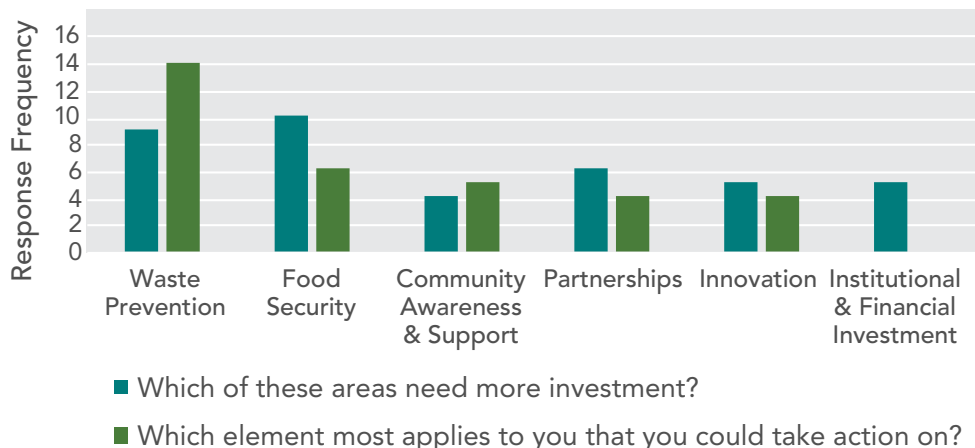
About half of the participants shared that nothing was missing from the vision. Other participants identified two main gaps: agriculture; and climate action and resilience to climate change impacts. The latter was identified as something that should be incorporated throughout the full vision, rather than as a stand-alone element.

## Question 2 & 3: Which of these areas need more investment? Which element most applies to you that you could take action on?

Participants were asked to choose one component of the vision for each of the following questions. The results are shown in the graph below. Results showed the highest areas for investment were in the Waste Prevention and Food Security areas. Results also showed that participants were most able to act on Waste Prevention.

The vision is a living document and it is expected that components will evolve over time.

## Feedback on the Shared Vision



# Food Waste Flow Analysis & Strategic Circular Interventions

Step 3 of the Circular Food Hubs process developed by COIL is to conduct a high-level waste flow analysis, informing recommendations for the most impactful circular solutions in mainland Nova Scotia.

Researchers from Dillon Consulting were secured to do this work. They presented a summary of the food waste flow and systems analysis results, along with strategic intervention recommendations. The consultants' presentation can be found [here](#). The complete report will be featured on the project [webpage](#).

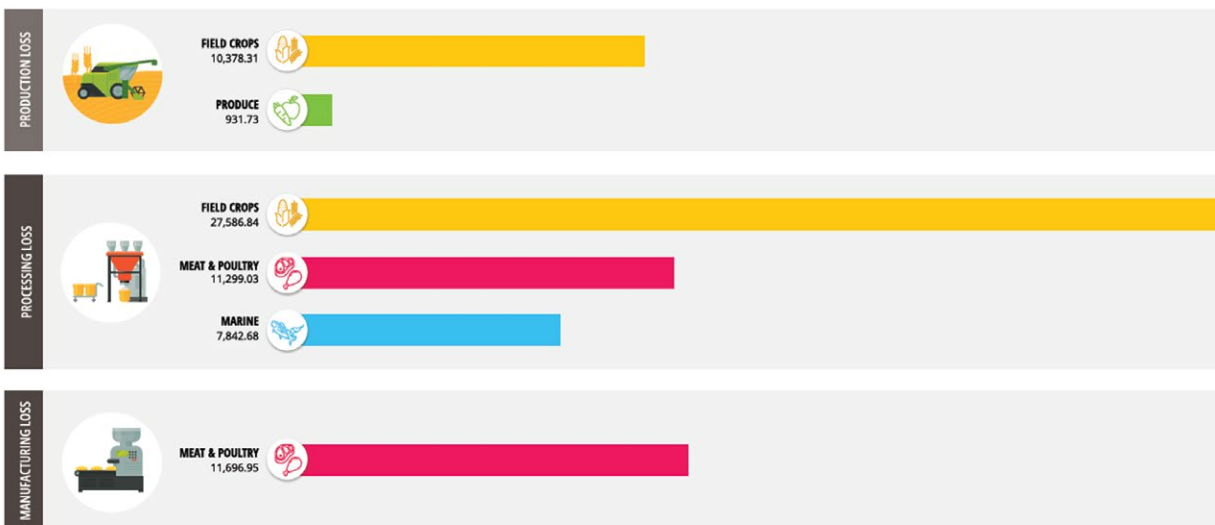
Waste and loss data was collected from organizations in Nova Scotia at all stages of the supply chain and supplemented with data from Statistics Canada. Stages of the supply chain include production (farms and fisheries), processing, manufacturing, distribution, retail, institutions (restaurants, hospitals, etc.) and household. The food categories include:

- field crops
- dairy and eggs
- meat and poultry
- produce
- marine
- sugars and syrups

The analysis provided both the amount of food waste in kilotonnes; and the associated amount of greenhouse gasses (GHGs) from each category of food product, at each stage of the supply chain. The analysis found that the largest quantity of food waste occurs at the point of processing (220k tonnes) followed by production (96k tonnes), manufacturing (83k tonnes) and household (106k tonnes). The chart below shows the stage in the supply chain and the food product responsible for the greatest amount of GHG's emitted.

In the **production** stage, field crops such as wheat, corn, and hay account for the largest quantity of product lost and GHG emissions. Produce is also identified as an important hotspot for GHG emissions. Wasted field crops and produce on farms is often caused by unharvested crops left in the field due to a crop being undersized or damaged, or there are too few workers to harvest, or the price is too low to justify the harvesting work required. Circular interventions to address waste at the production stage include gleaning networks to harvest produce that is otherwise good product, and diverting wasted fruit and vegetables to animal feed when it can't be consumed by humans.

## Hotspots for GHG Emissions (tonnes of CO2 equivalents)



During the **processing** stage, which generates more than twice the amount of waste than any other stage, the food category that is most wasted and results in the greatest GHG emissions are again field crops. The husks, bran, and germ of field crops are most often lost during the milling process. Additionally, meat, poultry, and marine waste that is created during processing cause high rates of GHG emissions relative to amounts that are wasted. Strategic interventions in the processing stage include diverting field crop waste to animal feed and bedding; and using inedible meat and seafood products as fertilizers (i.e., fish meal, bone meal) or turning these into biodiesels or lubricants.

In the **manufacturing** stage, meat and poultry products are the third most-wasted food category after field crops and dairy & eggs. However, they are labeled as a hotspot because of the significant GHG emissions that result. Waste during manufacturing of poultry and meat products is most often caused by culturally determined definitions of inedible animal parts (i.e., chicken feet, pig tails) and spoilage. One strategic

intervention was to explore and develop a market based on a redefinition of what is considered an edible animal part (so these previously wasted products can be sold and consumed). Many animal parts currently considered inedible in parts of Canada are used as key ingredients in recipes around the world.

When food is prepared and consumed in **households**, there is a considerable loss in amounts of food, yet this stage was not described as a GHG emissions hot spot, in part because Nova Scotia has province-wide composting programs. In addition to the hotspots identified by this research, there are strategic interventions that can be applied across other areas of the supply chain, such as developing or expanding the use of a food rescue platform to share the availability of excess products.

# Moving From Vision to Action

## Breakout 1: Feedback on the Recommendations

Below represents the themes, common ideas or recommendations that surfaced during the first breakout discussion. Participants were split into small groups to provide feedback on the waste flow analysis and strategic interventions research. Participants were presented with two questions:

- Do you support the recommendations?
- Are there solutions that are missing or could be improved?

Responses to these questions have been grouped into the main themes shown below.

### Support for recommendations that align with existing small-scale initiatives.

Some groups talked about zero waste initiatives that exist already at a small scale and are aligned with the recommendations. Some examples include the gleaning network called Found NS that gathers volunteers to harvest farmer's field crops that would otherwise go to waste. There are also food recovery organizations that operate in Nova Scotia including **Flashfood**, **Olio**, **Too Good to Go**, and **Second Harvest**. Participants were curious to learn more about whether these resources are underused, and if so, what would be needed to increase awareness and increase the scale of their work in Nova Scotia.

### Support for changes to policy and regulations.

Some discussions reflected on how the focus of most recommendations were on the individual responsibility of small businesses and consumers; and there was some missing emphasis on what can be done at the policy and industrial level. There was curiosity about what policy changes would have the most impact in Nova Scotia and their concomitant efficacy in reducing GHG emissions of food loss and waste.

Recommendations that were focussed on the industrial level of the food system resonated with participants. They talked specifically about the opportunity to make a meaningful impact with the grocery sector and commercial producers who are working towards climate and sustainability goals. Many participants also wanted to see these changes supported by changes to policy and regulations, such as decisions related to best before dates and regulations on food and food waste in public institutions, including long term care facilities and hospitals. The specific policy or regulation that requires attention was not discussed.

### Interventions were missing that focus on shifting consumer culture and education.

Participants identified that shifting consumer culture and knowledge of food loss and waste was missing from the recommendations and is a crucial component of all prevention initiatives. One group suggested that an education program could be used to explore what products could be produced locally, and what food items could be created from what is sometimes currently considered waste (e.g., pork rinds). The **Kelp Fest** organized by the Ecology Action Centre provides an example of a Nova Scotia initiative that uses education to build awareness, create demand for a new food product, and support a business opportunity.

Additionally, food planning to prevent food waste is included as one of ten **recommendations for personal climate** action presented by the United Nations.

Food planning is also one of three strategies presented by **Love Food Hate Waste Canada**. This strategy plays an important part in reducing household food waste. One group would like to see online educational initiatives that work on this level as part of the interventions in Nova Scotia.



### **Support for the local food system**

The scope of the Food Waste Flow Analysis shared recommendations based on the supply chain in Nova Scotia. However, it did not discuss the ways in which local supply chains (and changes within them) offer greater GHG reductions compared to global supply chains – and namely, how Nova Scotia’s significant reliance of food imports present a GHG reduction challenge. Participants would like to see comparisons between locally grown/processed/sold products, and imported products, from a GHG reduction perspective.

### **Breakout 2: Taking Action**

The following section represents the themes and common ideas or recommendations that surfaced during the second breakout discussion. Participants were asked to identify how they could best advance circular food hubs in Nova Scotia, especially based on the research learnings that was just presented.

Participants split into small groups and discussed:

- What circular solution could you begin, or deepen?
- What steps would you need to take?

### **Support and ideas for infrastructure and coordination across the food system.**

Many participants discussed the need for infrastructure and coordination to reduce food loss and waste. For example, one participant talked about the need for more information about the by-products available from local production and processing activities. This would facilitate businesses taking advantage of opportunities to re-use or repurpose food waste. In areas with existing circular interventions in place, many are based on personal relationships across the food system – where people know the producers or businesses with by-products; what resources are available; and how these change throughout the seasons. This way of coordinating can work at a small scale and for one-off collaborations but are a limitation for system-wide interventions.

Other participants wanted small producers and processors to have more support to implement circular solutions. They talked about the costs and additional labour associated with testing new products and re-purposed materials, and they felt that funding and incentives were needed to motivate businesses to work with waste products in new ways.

Some participants shared how they envision a system-level response to reducing food loss and waste through cooperative use of large infrastructure pieces and sharing capital intensive resources. This includes cold storage centres dedicated to preventing the loss of perishable food before another food business can accept it. System level infrastructure also includes portable equipment for food processing and packaging that can be shared between businesses. Participants also want information about available resources shared with a broader audience, so more businesses can take part in circular solutions that work for them.

### **Interdisciplinary Collaboration.**

One participant suggested an annual in-person conference to bring different sectors together to discuss opportunities to reduce food waste. Several like-minded companies and researchers have been meeting regularly over the last 3 years. Initially this was to explore alternative proteins for salmon diets, but through dialogue interested parties have identified several new pathways for sharing resources and are looking into options for co-location. Making connections and having conversations regularly is crucial to learn about each other's work, explore common challenges, develop ideas, share resources, and establish collaborations.

### **Incentives and reducing barriers to change.**

Participants discussed how businesses can be supported and encouraged to take steps to reduce food loss and waste. Businesses are often spatially separated and thinking about primary needs, not thinking about waste management needs. When designing operations, there is an opportunity to factor in waste streams and the systems or equipment needed to repurpose what is otherwise going to be lost. There is also an opportunity to place food production, processing, and manufacturing businesses near each other, so that it is easier and less expensive to get the waste from one building to the next stage in the supply chain where the waste can be used.

Finally, participants expect rising food costs to be a factor that will lead to more interest in circular solutions to combat the decrease in profit margins. One participant shared the example of apple peels and cores that are lost in the process of making apple pies at a factory. Increased operating costs are incentivizing some businesses to adopt circular interventions to maximize product value.

### **Explore how the recommendations can be applied within the context of Nova Scotia.**

The recommendations in the waste flow analysis report represent a starting point to spur further discussion for innovative ideas. Many discussions shared a common sentiment that there is additional Nova Scotia context needed to best implement the most relevant recommendations. One participant shared that while the recommendations provided a starting point, additional work is needed to understand the details including the regulatory environment, the specific challenges with these solutions, and what is already happening to reduce barriers to change. For example, one participant shared that it is a significant challenge to repurpose seafood and agriculture waste products. This is due to the high costs associated with preventing highly perishable products from decomposing before they can be moved to a facility that will create a new and useful product.

## Next Steps: Pilot and Test

The shared circular vision amongst food system actors will continue to evolve throughout the project. A survey remains posted on the National Zero Waste Council website, gathering feedback and modifying the vision as feedback is received. If you haven't filled in the survey yet, please do so.

The project is now moving into the pilot and test phase. The National Zero Waste Council is collaborating with Halifax Partnership and COIL to provide grant support for the piloting and testing of circular solutions. This phase will involve a competitive process and funding up to \$5000 per successful candidate. This opportunity will be open to new initiatives and existing solutions that are trying a new approach to deepen their impact. The grant application process will open in October. Watch for an announcement on the opening [here](#).

On behalf of the partners, a generous thank you goes to all participants that attended the workshop From Vision to Action. We encourage you to continue connecting with us and each other as this project advances. Please share this project widely with your network.

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