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Food Security Action Initiative

JUNE 2022

INSIGHTS FOR ACTION PLAYBOOK

Reimagined Future of Food Security and Climate Resiliency

Advancing a future of more secure, accessible, health promoting food in today's increasingly disruptive climate is not just a good thing to do. It's critical. Over 5.6 million Canadians live with food insecurity, hunger, and poverty every day of their lives!

Why address food security? And why so urgently? Some sobering facts paint the picture:

- With inflation rising, 23% of Canadians report eating "less than they should"[1]
- One in five Canadians expect to use a community food program in the next six months if prices keep rising[2]
- Globally, 193 million people are experiencing acute food insecurity[3]
- Ongoing supply chain disruptions are triggering shortages from fertilizers to baby formula, which reached 74% out-of-stock in the US[4]
- Intensifying climate changes are causing billion-dollar losses in major food-producing regions like California[5]

The sustainability and resiliency of humanity depends on changing these numbers for the better. It calls for coming together, rethinking and reimagining the food system.

1 Food Banks Canada. June 2022. foodbankscanada.ca

2 Statistics Canada. 2022. The Daily: Rising prices are affecting the ability to meet day-to-day expenses for most Canadians.

3 FAO. 2022. Global Report on Food Crises: acute food insecurity hits new highs.

4 Bloomberg News. 2022. One in Five US States Is 90% Out of Baby Formula.

5 Medellin-Azuara et al. 2022. Economic Impacts of the 2021 Drought on California Agriculture. California Department of Food and Agriculture Report. Washington DC, USA. 23 pp.

Mobilizing a Reimagined Future of Secure, Resilient and Affordable Food for Everyone

Future of Food Security and Climate Resiliency Insights for Action

RSI's webinar series on the Future of Food Security and Climate Resiliency could not have happened at a more relevant time. Lingering supply chain disruptions off the back of the pandemic and Russia's invasion of Ukraine have caused a complete rethink of our food distribution system. We are amid a major shift from a 'Just in Time' model to a 'Just in Case'. This brings huge consequences to the price of food. Food inflation is at 40-year highs with the expectation that it will worsen because of Ukraine's inability to export the 30% of the worlds grain it supplies to the global market. As always, it is the most vulnerable who are impacted the greatest.

To step up to this systemic challenge, RSI launched a Food Security and Climate Resiliency initiative this year, composed of a multi-disciplinary thought leadership webinar series, this playbook and a call for action partners.

Using a systems and future lens approach, the webinar series featured a diversity of renowned experts and leaders from Canada and the USA. They generously shared evidence-based strategies and solutions to key food security challenges facing individuals, organizations and communities, especially those most vulnerable.

To show the interconnectedness of food security and resiliency across the supply chain - growers, food processors, distributors, food waste management, and consumers - we adopted a circular economic framework as the foundation for this STEPUP to food initiative.

This **Insights for Action Playbook**, co-authored by RSI and the webinar speakers, is a pragmatic guide and resource for organizations, communities and individuals who are motivated to reimagine and address the systemic Food Insecurity and Climate Resiliency challenges, today.

As an organization, RSI is also committed to continue building on this work and collaborating with action partners who share this mission too.

We hope you enjoy this playbook – and would be delighted to hear and explore your thoughts and ideas for action too.

Patrick Gossage, MBA
RSI Board Secretary

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Playbook Team:

Publisher/Strategist:
Yasmin Glanville

Senior Editor:
Matt Hammond, PhD

Thought Leadership Contributors:
Yannick Beaudoin, PhD
Mike Carter
Dihan Chandra
Sylvain Charlebois, PhD
Phil Fung
Yasmin Glanville
Matt Hammond, PhD
Neil Hetherington
Brenda Hsueh
Sam Kashani
Rod MacRae, PhD
Kate McMurray
Jess Newman
Tammara Soma, PhD
Kim Zeuli, PhD

Design:
Julia Baranovsky

Communication:
Urvil James Villaruel

Photography:
Brenda Hsueh,
Sara Wiggins,
Adobe Stock

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Contact for more information
communications@rethinksustainability.ca
www.rethinksustainability.ca

Part 1:
Connecting the Dots
A systems view of food, climate and the economy

Why now? Why a Systems Approach?

Over 5.6 million Canadians live with food insecurity, hunger, and poverty every day of their lives! With the impacts of Covid-19, rising inflation and climate change across the supply chain, the actual number of people living with hunger is likely a lot higher than what is reported.

The 2022 Food Price Report for Canada forecasts a 5% to 7% increase in food prices in 2022, the highest in its 12-year history. This translates to an annual cost of food of $14,767 for the average Canadian family – an increase of $966 over 2021.

This is a highly concerning figure for Canada's most vulnerable people. There is more than enough food produced to nourish every Canadian, but over 50% of our produce gets wasted. There are clear systemic challenges that need to be explored. These complex supply dynamics are shifting rapidly.

It is a complex, interconnected problem that needs to be explored, understood, and addressed with a futures lens and systems approach.

- The food waste crisis facing our world is getting bigger and more complex every day. The magnitude of this crisis is exacerbated by the tsunami of economic, social, and environmental disruptions negatively affecting the reliability, affordability, and accessibility of food across the supply chain.
- With an estimated global population of 7.7 billion people, and the UN's prediction of 8.0 billion by 2023, that is a lot of people who rely on access to healthy food as a primary life source. The food crisis is too complex to fix with linear strategies and piecemeal solutions. More circular and holistic strategies and on-the-ground partnerships are needed to discover and implement solutions that work in the realities of our fast-changing climate.

Part 2:
Rethinking and Repurposing Food Waste
A Circular Economy of Well-being, Business, Communities and Cities

This section provides four systems level perspectives -- by renowned thought leaders Yannick Beaudoin, PhD, Sam Kashani, Tammara Soma, PhD, and, Neil Hetherington -- on how to rethink and repurpose food waste for advancing a future of more secure and accessible food and a wellbeing economy.

Ensuring Access to Food by Defying an Unfriendly Economic System.

By Yannick Beaudoin, PhD,
Director of Innovation for Ontario, David Suzuki Foundation

The world is experiencing a confluence of deeply disruptive events that have particularly profound consequences for our food system. Whether it's the acute nature of war, a pandemic, or the chronic, long term global to local effects of climate change, ecosystem degradation and pollution, consistent access to quality, nutritious food has become more of a struggle for a growing portion of the global population.

Here in Canada, on Turtle Island and Inuit Nunangat, food equity, sovereignty and justice are increasingly threatened. As an economic commodity, food flows through society prioritizing those privileged with purchasing power leaving crumbs for those in most need. Food banks have never been more accessed in Canada in connection with the pandemic and now, most recently, the aggressive inflation pressures caused by a dysfunctional economic model. And yet, food waste (as inedible foods being discarded) levels remain incredibly high.

Food and water are the clearest examples of how a poorly imagined economic system has to this day not been able to ensure non-negotiable outcomes like assured access to clean water and nutritious food for all.

A system based on a food-to-market principle rather than a food-to-mouth right, cannot be expected to help alleviate the deep insecurities and injustices that are increasingly pronounced. Adding to that fundamental flaw, the relentless drive to globalize food systems and supply chains has unwittingly diminished resilience to acute and/or chronic disruption.

This land and its many nations could easily be self-sufficient, especially when it comes to food. We instead have relegated our food sovereignty and security to economic actors that are completely disconnected from real needs and rights. From commodity traders who profit immensely from food restricting events like wars to market investors influencing future food prices by affecting the resources needed for production, our food system is nested in an extractive, profit-driven set of values designed to take advantage of manipulated scarcity in order to benefit a few privileged hands.

Image 1. Well-being, with its many supporting factors, is at the centre of a well-being economy.

It is time to circumvent this antiquated economic worldview. There are many ways to undermine greed-based, globalized economics and encourage an economic purpose designed to deliver well-being for people and planet (e.g., We All Can, 2022). These include community-led efforts to re-localize, and democratize our food production, such as:

- Urban farming and foraging
- Rooftop gardening
- More farmers markets
- Normalizing government support for short distance farm-to-fork business models
- De-industrialization of large-scale agriculture
- Farmer empowerment

It is important to note that the solutions have always been there, from Indigenous practices to biodynamic, climate and nature positive farming – to name but a few examples.

The challenge is really about how we to work together to surface and amplify those solutions and sound practices in spite of an economic system that is in opposition.

Resources

We All Can. 2022. Well-being Economies Alliance for Canada and Sovereign Indigenous Nations. weallcanada.org

Complex is Interesting. Simple is Doable.

By Sam Kashani,
Managing Director, TooGoodtoGo (toogoodtogo.ca)

We needed to start fighting climate change yesterday. But, how? It is a complicated, daunting problem. It is here - between urgency and helplessness - that many people become paralyzed.

It is commonly assumed that finding solutions to the climate crisis is the job of experts and policy makers. But actions that can have the largest impact do not require large, sweeping policy changes. They require habits to adapt. It is now more evident than ever that it is everyone's job.

In the last two decades, our perspectives and understanding of climate change have evolved, so we should naturally expect the ways we are tackling the issue to evolve. This issue is complex, which is exactly why we need simple solutions to combat it - things that make sense, are easy, affordable, and most importantly, doable.

It's not just about solar panels and electric cars. *We can be part of the solution simply by not wasting the food we produce.*

The more you know

Globally, food waste represents nearly 10% of greenhouse gases emitted into the environment, with related agricultural and forestry activities upping that number to 24% (Project Drawdown, 2021).

We waste more than 40% of the food we produce globally; and in Canada, we waste over half of the total food produced. The UN's number two goal for sustainable development focuses on eradicating hunger through sustainable agriculture and a zero-food-waste objective (United Nations, 2012).

The data is overwhelming, but also shows a clear picture of the opportunity we have. Food waste is central to the problem, but it is not technology or lack of infrastructure holding us back from acting. It is our mindset and how we have chosen to frame the issue. 94% of Canadians are motivated to reduce their food waste (LFHW, 2020) so how do we turn the motivation into action?

How can we democratize it?

It is energizing to think of the impact individuals can have. Democratizing food waste on the local level will have sweeping positive consequences on a global scale.

As a certified B-Corporation and social impact company, Too Good To Go is unified by a single vision: a planet with no food waste. Our marketplace (app) connects consumers with businesses that offer their daily surplus food at a fraction of the usual cost, benefiting both the industry and the customer; but most of all, the planet.

We work with restaurants, grocery stores, hotels, cafes, and bakeries to achieve a zero-waste operation. We empower consumers to take the simplest action: Collect the surplus, perfectly good food and stop it from going to waste. We are saving two meals per second globally and while we are proud of this accomplishment, we know that we have a lot of work ahead of us.

Democratization means giving access and control to the people. It is about using the power of the collective to create a tangible way for everyone to be a part of the solution.

The paradigm shift of how we look at food - and how we confront the issue of food waste - needs to start at home, in our very own kitchens. Once we do that, we can turn one of our biggest problems into one of our best and simplest solutions.

Yes, fighting climate change is complex, but not throwing out that browned banana is definitely doable and part of the solution!

Resources

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Tackling Food Issues Through Repurposing and a Right to Food

By Neil Hetherington,
CEO, Daily Bread Food Bank

Rethinking food waste is essential for climate action and global stewardship of the environment. Greenhouse gas emissions, for example, can be significantly cut by redistributing good food that would otherwise be wasted (Gooch et al., 2019). But simply repurposing food avoids the larger issue of poverty and its root causes.

We also need to advocate for and fulfill a right to food - where everyone has access to healthy and nutritious, culturally appropriate food.

The current food bank model tackles the food access issue by repurposing and redirecting food to those who need it. About 50% of Daily Bread's food for clients comes from farms that cannot use it, such as peppers too large or small for market. The rescue of wasted food for charitable giving makes an enormous impact on the lives of families.

But there is also a deeper need to ask why people's right to food not being realized in the first place.

This question goes beyond the charitable model to a public and private duty to address root causes of food insecurity.

At heart, food access issues are problems of poverty, income and affordability. Income insecurity means that many people do not earn enough to meet their basic needs. Social assistance programs like Ontario Works or Ontario Disability Support Program, for example, place individuals well-below the poverty line. Expensive food and inflation then widen the affordability gap.

Ultimately, we must tackle food insecurity by solving the income and affordability issues. Our ongoing work is founded on three advocacy platforms that aim to decrease the lineups we see at food banks every day. The main paths are:

- **Readjusting income security** – supporting employment, wage and benefits where they support basic food access. A 15% increase in Ontario disability pay, for instance, would decrease food bank visits by 50,000 per year in Toronto alone!
- **Creating decent and affordable housing** – now a top-of-mind issue in Canada. Many options, like housing supplements and inclusionary zoning, can be rapidly deployed and warrant our careful consideration.
- **Reducing the impacts of precarious employment** – making sure that nobody has to work 2-3 jobs with no benefits. Should the model that benefits are up to the employer be reconsidered in favour of universal guarantees? These are the scope of changes to be weighed for lowering the barriers for families to afford food.

How do we get to there from here? As an individual, you can support food banks by volunteering, donating food and funds. However, it is also important to engage with the life lessons that can be learned when filling a food bank donation bag. We can talk to our children to help them understand the issues behind food insecurity and the relationship between food-waste and food insecurity. It is the lived and shared experience that makes the difference.

We must also engage at corporate and civic levels. Companies are stepping up by - in addition to giving financially – taking on a deeper level of HR engagement, such as in-person group volunteering at food-sorting events. We can all also ask our elected officials to deploy the resources they need to make their strategies work for affordable housing and more. Today is the day to build a better Canada, and we do that by holding individuals in leadership positions to account.

Is there the courage and leadership to make the changes required so that everyone can thrive?

Resources

Gooch M, Bucknell D, LaPlain D, Dent B, Whitehead P, Felfel A, Nikkel L, Maguire M. 2019. The Avoidable Crisis of Food Waste: Technical Report; Value Chain Management International and Second Harvest; Ontario, Canada.

Closing the loop for a just circular food economy: Three key considerations

By Tammara Soma PhD,

Assistant Professor, Simon Fraser University & Research Director at the Food Systems Lab

The importance of understanding worldviews and promoting inclusive processes to rethink and repurpose food waste for a circular food economy is foundational to long term structural changes. These considerations are key to our work at the Food Systems Lab - a social innovation and interdisciplinary research lab based at Simon Fraser University. At the Lab, we seek to move beyond band-aid solutions and towards a systems-based approach. As such, this brief insight highlights three key principles for rethinking and repurposing food waste:

1. Analyzing root causes

Without analyzing root causes, as scholar Zsuzsa Gille noted in her work, "solutions to the 'food waste problem' limited to technological innovation and a few sites or even countries will prove insufficient, and will likely exacerbate existing inequalities" (Gille, 2012). Analyzing root causes is critical if we are to design waste out of the food system and to solve issues without creating further harm/negative externalities. If we are to look at some of the root causes of food waste, we will find economic, political, and social systems embedded within a colonial and capitalist worldview. Overproduction accompanied by excessive natural resource extractions is enabled through a colonial system, which in the context of Canada, is done on Indigenous lands and territories.

Challenging worldviews premised on the commodification of food, labour, and natural resources is key to closing the food systems loop and promoting a just circular food economy.

2. Why scale matters in circularity

The food recovery hierarchy framework (Soma, 2022) is guiding food practitioners and scholars to rethink and repurpose food waste.

As illustrated in Image 2, a top priority when it comes to food waste is the role of prevention. However, it is unfortunately the least tackled approach to rethinking the food waste problem. Next on the food recovery hierarchy is "feeding hungry people", "feeding animals" and at the very bottom of the framework is landfilling food waste.

Image 2. Food recovery hierarchy (Diagram adapted from the EPA Food Recovery Hierarchy).

While this food recovery framework offers helpful guidelines, without considering the issue of scale, our efforts to rethink or repurpose food waste for a circular economy may continue to prop up industrial scale factory farming, a two-tiered food system, and other systems that rely on the status quo of wasting to continue.

3. A values-based approach

Recognizing the Indigenous principles of "All My Relations", the teaching that "food is medicine", and the importance of thinking long term (e.g., seventh generation principles), offers an opportunity to promote a seismic shift in how we approach the food system.

A values-based food system is based on these principles:

- Justice where food, people and the natural environment are not commoditized.
- Policies are developed in an inclusive and holistic manner.
- Inequalities that result in the paradox of massive wastage amidst global hunger is addressed once and for all, not through more band aid solutions, but through shifting values to transform our food system and our economy.

Image 3. A values-based approach to a closed loop food system. Diagram developed by Kelsey Carriere. For more details on the different elements please see Soma (2022).

Resources:

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Committee, National Academies of Sciences "A National Strategy to Reduce Food Waste at the Consumer Level: Consensus Report".

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Summary

Transforming food waste from a pervasive problem into a circular opportunity means rethinking our food system. A food-to-market mentality still prevails over the food-to-mouth approach that would provide better access to food. But rethinking and repurposing food waste must be done systematically, recognizing a hierarchy of better uses for waste food and creating a values-based food system instead of commodity-based one. The necessary shift comes down more to mindset than technology. We must cultivate the idea that change begins at home and play our role in redirecting food waste to where it can be used. However, in repurposing and redistributing wasted food, we must not overlook the root causes of unequal food distribution. A right to food - where all people have their needs met - can only happen when wage, affordability and social security issues are adequately dealt with.

Part 3:
Sustainable Food Supply
Transitioning to Health Promoting and Locally Sourced, Sustainable Food Supply for Canada

It's easy to take food for granted. It just appears on grocery shelves, front porches and restaurant tables. But behind the shelves, food follows a complex and circuitous journey from farm to mouth. The rise of "transcontinental lettuce" means that North America's fruits and vegetables may travel 2500-4000 km before reaching us (Haliwell, 2002) – through time zones, airports, depots, supermarkets and other nodes of exchange.

But even before this journey are the steps from precursors to product. Phosphorus and nitrogen fertilizers, for instance, are integral to modern agriculture but are supplied from few, often distant, sources. This is our food system – massive, productive and interlinked.

Perils & opportunities on food's journey

Many factors influence the supply of food on its journey, dictating how much and what kind of food reaches consumers. Disruptions, choke points and distortions may occur at all levels of the food system and impede the equitable flow of food from farm to mouth.

- At the ***policy level***, regulations introduced to one sector may inadvertently conflict with another.
- Disrupted ***resource and monetary*** flows can lead to shortages and inflation, such as the recent 86% surge in fertilizer prices (Statistics Canada, 2022).

- At the ***food production level***, climate-driven droughts (e.g., those causing billion-dollar losses in California; Medellin-Azuara et al. 2022) and other landscape pressures can drastically curtail food production.
- ***Food distribution*** can be hampered by conflicts (e.g., war in Ukraine) and distorted by market forces, causing intermittent shortages and food deserts.
- Within communities, ***people's*** access to nutritious food is shaped by socioeconomic factors, and exacerbated by shocks like the Covid-19 pandemic (Daily Bread, 2021).

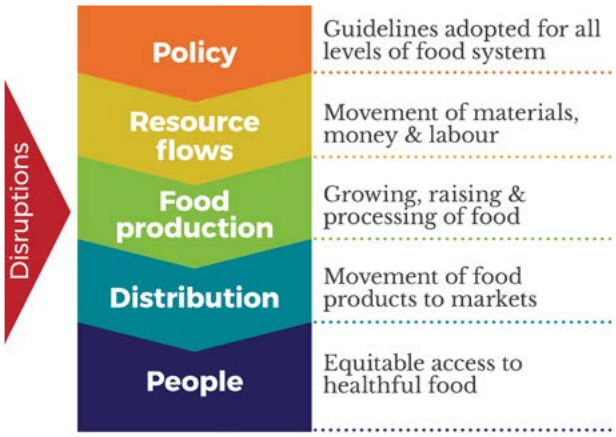

Image 4. Levels of organization and factors influencing food supply.

But just as problems emerge at every level of the food system, so too do solutions

– From grassroots gardening to supply chain innovations. The task ahead is weaving together these changes - across geographies and scales of organization - to transition to a healthful, local and sustainable food system.

This section of the ***Insights for Action Playbook*** draws on three complementary perspectives of what it will take to transition Canada's food supply:

- At the food production level, what it means to use our existing farmland regeneratively for a better future (Brenda Hsueh).
- Growing more food in our untapped urban spaces (Matt Hammond, PhD).
- How to connect policies for joined-up and effective solutions (Roderick MacRae, PhD).

Taken together, the message is clear:

Acting now, acting wisely and acting together is necessary for the future of food.

Resources

Daily Bread. 2021. Who's Hungry? Report. Daily Bread Food Bank and North York Harvest Food Bank. 39 pp.

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Transitioning to Sustainable Food with Local, Regenerative Agriculture

By Brenda Hsueh,
Organic Farmer, Black Sheep Farm

I am a Chinese Canadian woman farmer. I have been farming organic vegetables and rotationally grazed sheep in Grey County, Ontario for 13 years. My Black Sheep Farm is on the lands of the Mississauga, Odawa and Anishinabewaki, subject to treaty no. 45 1/2 of 1836. I manage the farm using agro-ecological and regenerative principles. Farming regeneratively means that the land should be improved over time, not depleted. Biodiversity is therefore prioritized and soil life increased to go beyond sustainability and to rebuild what has been lost.

Image 5. Levels Agroecologically-managed sheep at Black Sheep Farm.

Regenerative agriculture is gathering momentum as an answer to unsustainable agricultural practices.

While not yet codified, it involves:

- Minimizing soil disturbance with low or no-till planting. Such measures can lock away several tons of carbon per hectare each year in the soil (West and Post, 2002).
- Fostering biodiversity with mixed plantings, conservation of hedgerow and waterway habitat and more. Hedgerows, for instance, greatly benefit pollinating insects (Morandin and Kremen, 2013).
- Maximizing living roots with perennial plant systems (e.g., grasslands) and integrating trees into grazing lands (sylviculture) – a practice shown to boost carbon levels in the soil (Aryal et al., 2019)
- Maintaining ground cover with cover crops and mixed plantings, so soil is never left bare to erode and lose nutrients. Cover cropping, for example, can prevent up to 70% of fertilizer leaching from fields (Tonitto et al., 2006).
- Integrating livestock with intensive and managed grazing. Done well, this practice grows high-protein forage for animals while increasing soil life (Sekaran et al., 2021).

Regenerative agriculture is climate resilient and spiritually fulfilling.

But it requires full-time farmers who constantly observe nature and respond to the needs of the landscape, their livestock and their crops. They must have a great respect for nature, themselves, their community, and practical intelligence. You are at once a business owner, a farm worker, a nature lover, a foodie and someone who values a long future for humanity.

Because sustainable farming is so encompassing, three changes are needed for this path:

First, to feed Canadians, we need a lot more farmers - upwards of 30% of the population growing food. This is because in order to be climate resilient, agriculture will be forced to become more people-powered and less industrialized with dependence on fossil fuels and chemical inputs. This is a big change from the current 0.7% of the population (262,455 people) who farm (Statistics Canada, 2021).

Second, a social and political shift is needed to prioritize farmers and food production, and to value them economically, morally and intellectually. With an average age of 56 (Statistics Canada, 2021), aging farmers are not being replaced by young people. This must change. Young people across all cultural groups should be encouraged and supported to become farmers as much as they are doctors and lawyers.

Lastly, Canadians will need to learn to eat differently with an inevitable transition to more localized food production. Long accustomed to buying food from around the world any time of year, there needs to be education on eating a local and seasonal diet. Farmers will also need to expand their experience and knowledge of what can grow in Canada, as many world crops can also be grown here - not mangoes or bananas any time soon, but less familiar staples like okra, bitter melon, callaloo and amaranth.

If everyone prioritized local food production in these ways, the future of food in Canada could be very rosy indeed.

Resources

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Statistics Canada. 2021. Canada's 2021 Census of Agriculture: A story about the transformation of the agriculture industry and adaptiveness of Canadian farmers. 12 pp.

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Fostering Food Security Through Urban Agriculture: Three Essential Steps

By Matt Hammond, PhD,
Chief Technology Officer, HiGarden International Inc

A key challenge for Canada is establishing a food production system that is resilient to climate, environmental and geopolitical changes. Food shortfalls should be expected if crop yields continue to lag behind population growth (Ray et al., 2014) and climate extremes further squeeze agricultural productivity (Ray et al., 2019; Ortiz-Bobea et al., 2021).

Keeping up food supply requires that a portfolio of solutions be developed and be ready to deploy. The portfolio view is important to take because different food production methods have different capabilities, places to use and exposures to risks (e.g., drought vs fertilizer limitation). Better crop genetics, precision agriculture, regenerative methods and more will no doubt strengthen the existing rural food system. But we must also shift focus to the food growing potential of urban spaces.

Urban Agriculture can uniquely contribute to food security because it: (i) Expands the number of hectares under production by using the marginal spaces of cities; (ii) can increase crops yields over open field methods by using powerful technologies like hydroponics; and (iii) insures against crop losses from extreme weather events when food is grown inside. It is the overlooked urban spaces - especially indoors - that HiGarden aims to catalyze into food-producing hubs.

In its favour, Urban Agriculture has an established history with at least 100 million practitioners worldwide (Orsini et al., 2013). It is also notable that as many as 1 in 2 Canadians - especially

younger - are now growing food at home (Mullins et al., 2020). Still, translating this grassroots interest into a sustainable and resilient food system is not a given.

Urban Agriculture will need to develop in three ways:

1. Evolving the technology further.

While urban growing methods boast environmental benefits (e.g., fewer miles driven from farm to mouth), they can and must become lower impact, even regenerative. Methods will need to reduce reliance on synthetic fertilizers such as industrial hydroponic nutrients and non-renewable inputs like peat moss. They will also need to integrate better with the organic waste cycles of cities (e.g., composted green waste). This low-impact and organic approach is HiGarden's ongoing focus in three pilot farms within the Greater Toronto Area. Well-developed renewable energy and water grids will also need to be in place to power urban farms cleanly.

2. Finding the socioeconomic sweet spots.

Urban farms must be socially and economically viable. So as urban agriculture spreads, it will be important to explore different farming models – from small backyards and home interiors to large vertical farms – for their potential to benefit communities through food sovereignty. One important aspect of this will be producing a greater diversity of food crops than the typical leafy greens on offer. We are currently testing three such farm models. Canada should also look to other jurisdictions for what successful urban farming looks like in different cultures (e.g., high tech indoor production in the Netherlands) and climates (e.g., low tech outdoor farming in Cuba).

3. Lowering barriers and raising incentives with policy.

Governance can help make good on public enthusiasm for Urban Agriculture if it:

- Identifies and removes barriers (e.g., hen bans) that discourage local food production.
- Offers incentives, such as tax credits, for initiatives that increase urban food production.
- Encourages programs in communities and educational institutions that introduce new urban growing methods.

These system-level steps can help Urban Agriculture realize its full potential in time. But our individual actions can be more immediate.

Daily, we have an opportunity to rethink how we value and use our overlooked urban spaces.

Look around at gardens, urban lots and building interiors and consider new possibilities for these food dead zones. Then, do what you can to support the initiatives transforming those spaces into something worthy of our food future.

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Joined-Up Policy: A Critical Ingredient for Solving Food System Issues

By Roderick MacRae, PhD,
Food Policy Analyst & Associate Professor, York University

Food policy and food system problems are often named as wicked (cf. Peters and Pierre, 2014). Their "wickedness" means they are difficult to implement, in part because resolution touches on many other issues at different scales (Chalifour and McLeod-Kilmurray, 2016).

Joined-up food policy creates the framework, mandate and implementation plan for solving food system problems.

Joined-up food policy can overcome these hurdles because it creates the framework, mandate and implementation plan for solving food system problems alongside connected issues, such as human and environmental health. It is therefore the kind of policy needed to transition the food system into one that delivers health, justice and sustainability.

A critical feature of the transition is improving our collective ability to manage in complex environments. Similarly, messy policy problems need solutions that "... foster integrative actions across elements of multiple sub-systems" (Jochim and May, 2010). The solutions themselves can be of several types that vary in their effectiveness and scope to address system-wide issues. They include strategies that:

- **Increase efficiency of the food system** by making minor changes to existing practices e.g., encouraging research on optimizing the energy efficiency of raising plants and animals.
- **Substitute one food system practice for another**, or develop a practice that replaces an inadequate one e.g., replacing air freight with more efficient, local distribution options.

- **Redesign food systems** to use human and physical resources in a fundamentally different way – e.g., developing the full set of policies for implementing right to food, food sovereignty and reintegration of humans with nature.

Success requires collaborative interventions from a range of actors (Head and Alford, 2015), including international agencies, First Nations, provincial/territorial governments, municipalities, firms, households/individuals and more. A wide variety of instruments – from constitutional provisions to programs and subsidies – must also enter the mix to affect desired changes. With so many elements in play, it is the design and execution of mixed interventions that we must improve, and quickly, to change our food system.

Canada has been quite weak in fostering these kinds of mixed interventions, resulting in significant implementation gaps. Although some people and organizations are naturally adept at it, in general, training in complexity management is poor at all levels. Many of our current food challenges may be seen to flow from poor complexity management skills.

Therefore, improving the ability of decision makers to manage in complex environments is foundational for transitioning to sustainability, health and justice.

All aspects of the food system will require change - from farm inputs to food retailing and the design of our kitchens and bathrooms – and changes will unfold through many different interventions. The policy challenge, and opportunity, ahead is to join them up.

For a detailed review of specific transition strategies, visit: foodpolicyforcanada.info.yorku.ca

Resources

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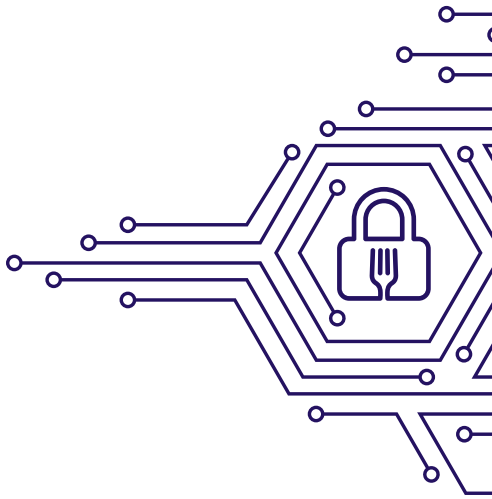
Summary

Transforming Canada's food supply to function in an uncertain future requires changes at all levels and scales. Among these changes, our approach to land use must evolve. Regenerative agriculture shows the potential for local and environmentally responsible food - provided farmers are empowered and supported to make the necessary changes. Urban landscapes must also be included in the unfolding view as places where vacant spaces and emerging technologies can make up agricultural shortfalls. Lastly, policy and decision-makers must apply solutions in ways that foster the broad collaborations and range of interventions that "wicked" food problems demand.



Part 4:

Future Food Processing, Distribution & Sustainability

A system-wide view of insights for building more robust food systems from farm to fork

Bringing food to the table depends crucially on the integrity of supply, processing and distribution networks. When these function well, food flows smoothly as a secure supply. Sustaining food's processing and distribution into the future means adapting to new realities on the ground - such as Covid-19 disruptions to Canada's chicken industry (Financial Post, 2020) and an Indonesian export ban on palm oil (Bloomberg, 2022). Adapting is easier said than done. It is not just about working around shortages of ingredients or transports. It is about purposely designing flexible, long-term systems that are resilient to them.

In Part 4 of the ***Insights for Action Playbook***, three thought leaders walk us through their visions for the future of food processing and distribution, including: The changes needed to remodel business structures for sustainability (Sylvain Charlebois, PhD); the imperative of changing consumer paradigms (Jess Newman); and the potential for upcycling food by-products to create local and circular supply chains (Dihan Chandra).

They show us that forward-thinking, cooperation and integration are at the heart of a sustainable food future.

Resources

Bloomberg News. 2022. Indonesia lifts palm oil export ban in relief to global market. Accessed: June 14, 2022.

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Fostering coopetition and circularity in the food system

By Sylvain Charlebois, PhD,

Researcher and Professor, Faculties of Management and Agriculture, Dalhousie University

Times are changing for the food industry. Several key threats and issues are disrupting and reshaping today's entire supply chain – including growers, processors, suppliers and food distributors, and ultimately consumers. The effects of the Covid-19 pandemic will permanently alter elements of the supply chain (Charlebois et al., 2021a).

But sustained inflation is also hitting the food industry extremely hard at 9.7% this year (Statistics Canada, 2022). Essentially, food price inflation comes down to: Climate change, the pandemic, war, and a nationalistic disposition with regard to product production. While a steady, reasonable increase in food prices is a good thing, this rampant inflation is something we cannot ignore or reverse. It will likely worsen over time. To redress what is really a constellation of issues, we need to work together and make the many changes that guarantee a secure food supply. *We must adopt a non-linear, whole systems approach to building a circular economy*

Two approaches will help hasten the necessary changes.

First, we must adopt a non-linear, ***whole systems approach*** to building a ***circular economy***. Doing so means broadening our understanding of how entire food systems work – and how they may ultimately work better. Understanding the history and context of food system practices, for example, is critical for making positive system changes (Charlebois et al., 2021b). But we also must heed the many other links connecting to food, such as energy and water resources, food safety regulation, agrobusiness strategies and more. It is only by understanding these linkages in the appropriate frameworks that we can make them more circular.

In other sectors, businesses like Ikea are leading the way by developing the mechanisms to become fully circular by 2030 (Ikea, 2022). The food system must follow suit. Food processing systems, working collaboratively with growers and suppliers, are essential components of a circular economy. These actors, and more, must share knowledge and enter into partnerships to work toward secure and sustainable food systems (Charlebois et al., 2014).

Second, we must change the dynamic among food system actors to achieve better outcomes. *The food problem will not be solved through competition, but through "coopetition"*, which is the strategic use of cooperation among competitors to move all parties forward. While the coopetition model is starkly different from

the status quo of "global hyper-competitivity" (Charlebois, 2008), it can offer a more adaptive way of doing business. Traditional competitors may, for instance, gain economies of scale and reduce risks by sharing food storage, processing or distribution resources.

Solving the issues facing the food system will not happen if organizations go it alone without sharing in knowledge and action. Rather, we need to rethink and remodel our current business structures, leveraging cooperation over competition.

In the end, we are stronger together.

Resources

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Regenerative Agriculture is at the Core of Sustainable Farming and Food Processing

By Jess Newman,

Senior Director of Agriculture and Sustainability, McCain Foods

Given the urgency of action to address the escalating food supply and processing challenges, McCain Foods is on track to meet several priority and global Smart & Sustainable Farming targets. The imperatives we see are:

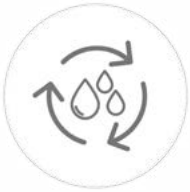
- **Supporting growers in implementing regenerative agriculture practices** on 100% of our potato acreage by 2030
- **Operating three regenerative and climate-smart Farms of the Future** in different growing regions around the world by 2025
- **Reducing CO2 produced per tonne** from potato farming, storage and freight by 25%
- **Improving water-use efficiency** by 15% in water-stressed regions by 2025

Regenerative agriculture is an ecosystem-based approach to increase farmer resilience

Regenerative agriculture is at the core of what we're doing. So what is it, and how does it help meet our global targets? Regenerative agriculture is an ecosystem-based approach to farming that aims to increase farmer resilience by enhancing soil health and protecting biodiversity to improve yields, while reducing dependencies on synthetic inputs. We frame this practice using six key agroecological principles:

1. ***Armouring soils*** by covering them, preferably with living plants.

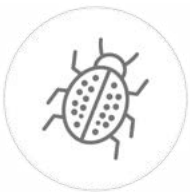
2. ***Minimizing soil disturbance*** from tilling and field work.



3. ***Reducing agrochemical impacts*** and optimizing water use.

4. ***Ensuring farm resilience*** to climate and other impacts.

5. ***Integrating organic and livestock*** elements for better agroecosystem health.



6. ***Enhancing crop and ecosystem diversity*** to enhance biodiversity benefits.

Regenerative agriculture is only now starting to take hold in the public consciousness. At present, the current paradigm and popular choice is centered around organic, locally-sourced food.

So there is a need to fill the gap between the consumer learning what regenerative agriculture is and having them want it.

Public belief and buy-in will be vital for ensuring the longevity of new agriculture models and organizations across the food supply chain. We must therefore help to broaden consumer understanding of how entire food systems are changing and how to fix the issues. But we must also learn what they truly care about - and cut back on costs related to issues that consumers do not value. It is this attention to values and demand that will ultimately make the food industry more sustainable and robust against emerging challenges.

Today is an exciting time of transition in the food system. Corporate commitments to responsible practices like regenerative agriculture can lead change, but must also bring consumers along with them through education and careful market development.

Working together from grower to consumer, we can make meaningful change.

The Future of Food in Times of Increasing Climate Change and Food Insecurity

By Dihan Chandra,

Founder and Managing Director, The Spent Goods Company

We know humanity can no longer continue to add more carbon into the environment. For instance, organic food waste that ends up in landfill releases greenhouse gases and is a significant contributor to climate change. According to Project Drawdown, dealing with global food waste is one of the ***top three solutions that humanity needs to focus on to reduce climate change*** (Project Drawdown, 2022).

As an individual, you likely don't waste food at home. However, what if the food you purchased directly helped to reduce climate change as well?

One solution is to purchase upcycled foods – delicious foods that incorporate food by-products that are typically discarded, like leftover juice pulp or barley grains used by breweries, into food.

For instance, brewery barley still contains high protein, fibre and low sugar after being used. Spent Goods capture these ***nutrients*** and keep them in our food system.

Image 6. Brewery barley is used in baking bread. Photo credit - Sara Wiggins swphoto.ca

By diverting these grains, we are ***reducing the*** eCO_2 that would have resulted. And ***The Spent Goods Company*** isn't alone – see the list of participating circular businesses at the Upcycled Food and Spent Goods Inside sections of our website (inside.spentgoods.ca/).

Why Canadians need to support local

We hear it all the time: By supporting local businesses, consumers are also investing in a local food supply chain that can be accessed even if global supplies are affected again.

Working together, we are stronger

By partnering with other organizations, we can actively address local food insecurity. Spent Goods, for instance, works with food justice organization Foodshare. They offer a residential food delivery program in Toronto and use profits to fund their non-profit initiatives focused on food insecurity and social justice. Individuals can directly support local food, food insecurity initiatives and receive fresh local produce delivered to their home. These alternative grocery models give consumers the benefit of choice and price, without giving up on convenience.

But are these solutions scalable?

Yes! To scale, we simply match local bakeries and breweries in close proximity to one another – then replicate this model across different neighbourhoods and cities to have a significant impact.

When purchasing a product in the future, reflect on whether it could be repurposed into something of value when done with it.

Given all these benefits compared to how we consume food today, the beauty of this solution is that it has the potential to nudge society away from a single use to a multi-use mentality. When purchasing a product in the future, reflect on whether it could be repurposed into something of value when done with it.

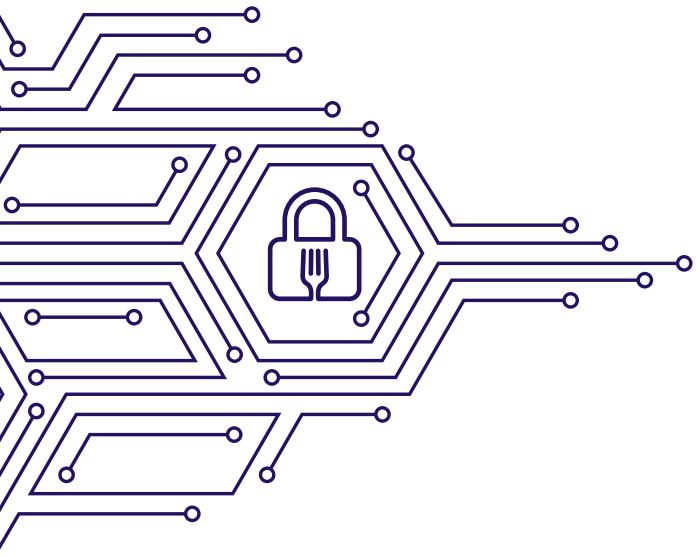
Resources

Project Drawdown. 2022. Sector Summary: Food, Agriculture, and Land Use. https://drawdown.org/sectors/food-agriculture-land-use. Accessed June 12, 2022

For more information on FoodShare, visit: http://spentgoods.ca/foodshare/

Summary

Inflation and other ongoing disruptions are challenging to deal with. We must understand the complex causes of global supply chain issues and leverage cooperation among food system actors to overcome them. Companies must embrace responsible agricultural practices like regenerative agriculture, as well as work with consumers for buy-in. Individuals and companies alike can contribute to a more sustainable future by building circular economies based on the upcycling of post-processing food by-products.



Part 5:

Future of Food Security for Communities and Cities

New models and innovations for ensuring food security in the face of complex change

Trends point to significant food security challenges in the future. Our cities are growing, with 68% of people to be living in cities by 2050 (UN, 2019). Superimposed on the demographics are environmental pressures on breadbasket agricultural lands, distribution chains and marketplaces. The threats to feeding human populations are both internal (e.g., supply chain inefficiencies) and external (e.g., extreme rainfall). And some, like climate change, are unique in the era of modern agriculture. The future landscape of food therefore hinges on unknowns and unpredictables. Given the uncertainty, new models and innovations will be all the more important for ensuring food security in the face of complex change.

Part 5 of the ***Insights for Action Playbook*** uses a forward-looking lens to explore new approaches to securing food supply in changing landscapes. Kim Zeuli, PhD discusses the planning and self-sufficiency requirements for cities to weather food crises. Phil Fung explains the importance of food sovereignty and community involvement for local, urban agriculture. Mike Carter presents agrivoltaics as an approach for improving energy and agricultural resilience. Lastly, Kate McMurray emphasizes community building initiatives by food retailers to drive positive changes in the food system.

Resources

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The Future of Food Security for Cities

By Kim Zeuli, PhD,

Founder and Managing Director, Feeding Cities Group – USA

The current model for emergency food response and recovery in Canada and the U.S. is outdated. Cities rely on the military, the federal government's emergency management agency (e.g., Public Safety Canada), the Red Cross and other humanitarian organizations to come to the rescue with emergency food and water provisions. Donations and volunteers also flood in, to help local charities and food banks distribute even more food and water.

But this outdated model, which has its roots in the 1800s, is inadequate. This model no longer works because the world has changed, the food system has changed and disasters have changed—which means the scale of response that has to be mounted is massive and will need to be prolonged.

Because of climate change, cities experience multiple disasters, cascading disasters and transboundary disasters. And multiple cities are impacted by the same disaster. No single institution, or even a set of national or global institutions, will ever have the capacity to adequately respond to the type of crises our cities are facing. This is especially true when they rely on unstable funding and labour models. The current institutions are largely donation-based and rely heavily on volunteers. Even government funding is limited.

The U.S. Federal Emergency Management Association (FEMA) has been stressed to near breaking points with recent hurricanes. Because of our a hyper-efficient, 'just-in-time' food supply chains, cities actually can and - as we saw during the pandemic - do, run out of food. Most stores only have 2-3 days of food supply on hand.

Perhaps the most critical problem associated with the current model is that it creates a false sense of security for city leaders.

Most cities believe they do not need a solid plan B and don't have one.

The current emergency food response model is based on providing adequate food for an emergency period, what disaster relief agencies call the 'immediate aftermath' of a disaster—which has historically been estimated as a few weeks. Current emergency food crises last months and years, not days. The impact of Hurricane Katrina on New Orleans in 2005 gave us the first glimpse of what was to come. It took almost 10 years for the food system to fully recover in one of their neighborhoods.

I founded the ***Feeding Cities Group*** to address this looming food security crisis. Our mission is to transform emergency food response and recovery in cities globally. We advocate for a different model that we call ***Sustained Emergency Food Planning***. This approach works within the

realities of the current food system, because *efforts to change our current food system will take more time than we have.*

Cities need to prepare for having no outside help arriving after the next catastrophic disaster. They need to be self-sufficient in their emergency food response, which means planning for the mobilization of their own resources and identifying local assets. A sustained emergency food perspective directs investment to priorities that both increase resilience and address emergency food crises.

Action is needed to build awareness around this emergency food planning crisis. City leaders need to prioritize developing new emergency food response and recovery plans for their city, testing new models and learning from other cities.

Building Food Security with Food Sovereignty and Community-Based Agriculture

By Phil Fung, P.Eng.,
Founder & President, HiGarden International Inc., www.higarden.ca

In 2005, the Millennium Ecosystem Assessment ushered in a new era. It showed that people had drastically degraded 12 of the 14 major land biomes on Earth (Millennium Ecosystem Assessment, 2005), with agriculture a leading cause of biodiversity loss (Dudley and Alexander, 2017). Growing cities and their agricultural footprints mean that we are losing the natural systems that sustain us - and our connections to them.

At HiGarden, our approach has been to build nature and its ecosystem services back into the urban environment – not in roadside verges and empty lots, but actually inside buildings where people live, work and relax. With the inbuilding of nature comes the opportunity for ***provisioning ecosystem services*** – those that provide us with food, medicine and materials. But we must also think about the co-benefits that can come with growing food. Indoor greening with plants, for instance, can trigger biophilic effects that improve physical and mental well-being (Mujan et al., 2019), freshen indoor air (Susanto et al., 2020) and provide educational opportunities at year-round indoor gardens.

Empowering communities to grow food gives them an ability to the meet the specific mental, physical and social needs of people.

A key insight is that empowering communities to grow food builds ***food sovereignty*** – the capacity for communities to control the production and distribution of their food. But it also gives them an ability to meet the specific mental, physical and social needs of people. Communities are unique and so must be the specific solutions.

In building small urban farms, we have applied a community-based model to deliver food security and other essential, non-food benefits. The main principles in support of that expanded food sovereignty are that:

1. **Distributed food systems support communities.** Smaller farms can be scaled out to add food supply in ways that are integrated with community planning. Food security follows with resiliency to food shocks and a degree of self-sufficiency for growers. Every house can be an organic farm.

2. **Community-based farms are people-centered.** Because choices are made by the community, small, embedded farms can better provide a diverse and culturally relevant supply of food.

3. **People-centered agriculture is health-focused.** With people at the centre of food growing, personal health can come to the fore, with decisions made to maximize physical health through diet; mental health through exposure to greenery and gardening; and overall regeneration of positive health.

The main advantage of our model – which is aligned with grassroots and small enterprise – lies in its adaptability: *It is only small community-based food systems that can target the varied food and health needs of people.*

Our collaborative pilot project in high-density St. James Town, Toronto is an example. Residents gain access to fresh vegetables and fish by growing food at a central hub and in their homes, and share data and experience on cultivating their chosen crops. People are the producers and beneficiaries all at once.

"Big Ag" will always be a core part of the food system. But we will only gain the flexible and people-centred side of food security by adding small-scale and distributed operations - empowering communities to grow food to fit their unique circumstances.

Every house can be a farm, and every person can – and must – shape our food future.

Resources

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The Power and Potential for Canadian Agriculture in Agrivoltaics

By Mike Carter,
Founder, First Green Energy Group

Food security and food supply has never been more in focus than today. Wheat supplies from Ukraine and Russia – one-third of the global total - are off the menu. India, the world's second-largest wheat supplier has suffered record-breaking heat, crop loss and an export ban. BC wildfires and extreme heat caused most of their 2021 tender and stone fruits to be degraded or unsuitable for retail. Interrupted supply further causes price rises in the supermarkets – and Canadians are rightly concerned.

"The global food crisis, already impacted by the COVID-19 pandemic and climate change, is being driven to famine levels by the war in Ukraine and the resulting lack of grain exports" - May 2022, United Nations

So what can we do to secure an accessible and affordable food supply?

One way is to adopt agrivoltaics - a new sustainable approach to agricultural production and processing.

Agrivoltaics combines the production of solar electricity from photovoltaics with the continued or enhanced use of the land for agriculture.

Agrivoltaics therefore enhances production and addresses shortfalls in the sustainability and security of Canadian agriculture.

Recent research shows that agrivoltaics improves crop production, food security, resilience and energy security; reduces reliance on global supply chains; and enables more agricultural revenue and employment opportunities - all without significant increases in use of water, nutrients and arable land (Pearce, 2022).

How do we make our food supply climate resilient?

In 2021, smoke blanketed much of Western Canada for months during a record-breaking heatwave that wrought havoc on fruit production. Cherries and blackberries cooked and shriveled, ruining crops for farmers in BC while vegetables failed in parts of Alberta. Predictions of very hot days shows more large heat increases coming to Canada's agricultural regions in the future (Climate Atlas, 2022).

Agrivoltaics can reduce the risk of extreme heat and also improve yields. This is because one of the many benefits of agrivoltaics is that solar panels protect plants like a shade cloth (Pearce 2022). In Arizona, the practice increased tomato and pepper yields while reducing water needs by creating cooler microclimates underneath the panels (Barron-Gafford et al., 2019). Such partial shading could be the difference between a crop that makes it to market and a write-off. Farm operation resilience is also improved by having covered space for animals that benefit from shade, like chickens and sheep. This covered space will also benefit pickers whose ability to work in the hot conditions suffers.

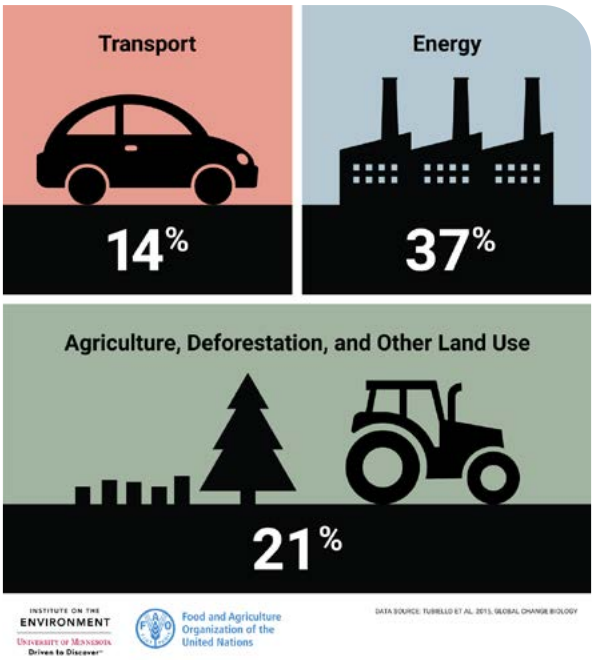
Solar panels also provide other benefits like onsite electrical generation for heating and cooling via heat pumps, lights, water pumps, harvesting, storing, and processing. This self-generated electricity can have a lower cost than electricity bought from the grid, especially where grid expansion would be required. Agriculture can thus get out in front in terms of electrical generation while reducing operational costs for farmers.

Resilience of crucial agricultural systems can also be built by linking battery storage to solar, as done in California to support agriculture severed from the grid by wildfires. Producers could benefit financially from this stored energy by supplying it to grid services when not needed for planting and harvesting. Rural Canada could have thousands of EV stations to charge electric tractors, autonomous planting, weeding and harvesting equipment, and to serve rural communities as Distributed Energy Resources. Having the farm future-proofed and ready for electric farm vehicles makes sense when unpredictable and high fuel costs continue to eat into food producers' margins. Today, rural Canadians could be early adopters of electrical infrastructure as opposed to the past when rural electrification happened last.

Agrivoltaics through the Climate Lens

Farming generates about 8% of Canada's greenhouse gas emissions. Agrivoltaics are a critical solution to begin decarbonizing this highly impactful sector and to mitigate climate impacts. Oregon State University research estimates that converting just 1% of American farmland to agrivoltaics would meet the nation's renewable energy targets, as well as save water and create a sustainable, long-term food system (OSU, 2022).

There is already strong evidence that farmers and consumers would support agrivoltaics. A recent poll found that 31% of respondents would spend more on products that are sustainable and better for the environment; and 64% would adjust their behavior for societal improvements (EY Future, 2022).



In all aspects, agrivoltaics supports sustainability - increasing the productivity of land, providing more diversified and consistent revenue to farmers and supporting the next generation of farmers. We must embrace it now to tackle climate change and ensure Canada is at the forefront of agricultural innovation.

Resources

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Building Healthy and Accessible Community-Centered Food Systems and Choices

By Kate McMurray,

Nutritionist and Outreach, Big Carrot

Food security is not just an issue of accessibility but also one of accountability. As producers, distributors and consumers we need to be held accountable to our food choices and how they affect our future. Disconnection from our food is a huge problem.

We need to put our groceries into a broader economic, social and agricultural context. We need a "why" when we are buying food - not just is this food healthy and affordable -- but also where is it coming from, how is it produced, how is this production affecting my community, my planet?

At ***The Big Carrot***, we are committed to providing healthy food options for our community but also to building a healthy food system. We do this by following the same advice we give our customers: Prioritize local, sustainable, organic and non-GMO products.

We offer our customers smart choices but more importantly we strive to empower them to be conscious about those choices. We want them to feel they have agency when it comes to affecting the food landscape.

Operating with transparency and integrity has enabled us to build a relationship of trust with our customers over the last 39 years and keep us alive in this increasingly competitive industry. We go above and beyond to provide information and education opportunities that help customers make informed decisions. We also promote transparency in the food system as a whole by

advocating for third party verification - systems like the Organic Standard and the non-GMO project (of which we are a founding member).

Bridging the gap between eaters and producers.

To move forward in a meaningful, sustainable way we need to build a network. We work to foster community on many levels - at the producer and supplier level, at the customer level, at the industry level through advocacy and partnerships, at the food access and justice level and at the grassroots level in the community with youth and school projects.

Our ***Carrot Cache and Nature's Finest Fund*** grant streams are a model of forward-thinking business rooted in community. Profits from our partnership with the ***Carrot Common*** are distributed in $500-$5000 grants that fund small, independent projects unsupported by larger grant systems. In the last decade $1.5 million+ has been granted to over 450 local innovators working to create a more just, sustainable food system.

An annual donation budget is also run to mobilize food access and food education programming as well as community resilience building.

We have built a relationship of trust with our customers.

This is what keeps us going. However, the lure of lower prices and online convenience is strong. We need folks to think more holistically. Community drives health. We still want customers to come into the store, sit on the green roof, interact with our nutritionists, attend events, build a healthy relationship with the food they're buying and eating - see the seasonal items, understand why organic strawberries cost more in the winter. Choose to eat more seasonally, choose to cook with diverse produce. This might sound idyllic but it is also really crucial to sustainability. It's getting the "buy in".

This community building model is essential for finding and developing innovative food system solutions and resiliency with and by business organizations and other key stakeholders.

Food companies need to be held accountable to their customers and customers need to be held accountable to their values.

Community-centric enterprises facilitate empowered decision making, accountability to each other, our environment, capacity building and resiliency.

Resources

For more information on:

- Carrot Cache Grant Streams, visit: www.carrotcache.com/
- Carrot Common, visit: www.carrotcommon.com/

Summary

The future of food security depends on forging new models that put communities first. At the distribution level, we must replace the current model of disaster response with a sustained emergency food perspective. Here, cities become more self-sufficient and resilient by using local food assets. Growing food can be done locally with urban farms that match the unique needs of communities and promote food sovereignty. Such farms should go beyond the mere provisioning of food and improve the mental, physical and emotional wellbeing of people. Farms can also enhance the accessibility and affordability of food through new synergistic approaches like agrivoltaics, where farmers coproduce solar energy and crops for better economic and agricultural resilience. Food suppliers also have an important role to play in community-building efforts, providing people with education for making informed choices and opportunities for food system innovation.

Part 6:
Summary
Key Action Insights

Part 1. Connecting the dots

Food systems are complex and must be approached as interconnected wholes. ***Adopting a non-linear, systems approach broadens our understanding of why entire food systems are changing and how they must be transformed.***

Part 2. Rethinking & repurposing food waste

To overcome food waste as a problem, we must turn it into a solution and address its structural causes in the food system.

- We must move past an antiquated, commodity-based worldview and economic model that leads to food waste, and transition to a values-based approach.
- We can transform food waste into a resource by empowering people to use it for good, such as redistributing excess food to others who need it.
- Creating a circular economy from food waste must flow from understanding the root causes and appropriate scales for change.
- We must also act on the underlying factors that lead to uneven distribution of food, such as income and affordability issues.

Part 3. Transitioning to health promoting and locally sourced, sustainable food supply for Canada

To revamp the food system to be sustainable, we must make coordinated changes to where and how we grow food.

- We must support farms to make the transition to environmentally responsible practices (e.g., regenerative agriculture) while expanding jobs in local agriculture.
- We should reconceptualize where food can be grown, and leverage urban agriculture to produce more local food.
- Dietary shifts to more sustainable, local and climate-appropriate foods will be necessary.
- We must overcome siloed policy and encourage collaboration of different actors in the food system – as well as build capacity to coordinate them in a complex decision-making environment.

Part 4. Future food processing, distribution & sustainability

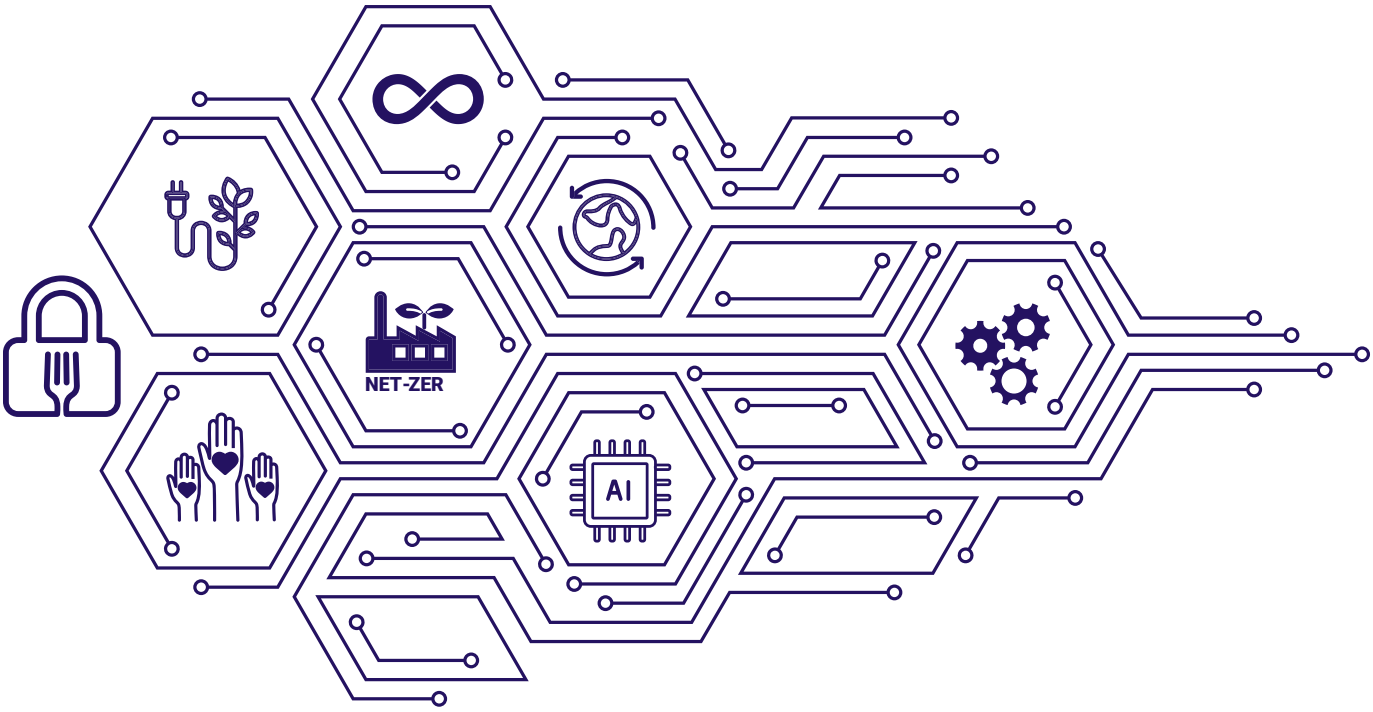
To build a strong future for food processors, suppliers and distributors, we must bolster them against the impacts of disruptors like inflation, conflict and climate change.

- The food problem will not be solved through competition, but "coopetition". We must remodel our current business structures to include cooperation for achieving benefits like economy of scale.
- We must educate consumers on sustainable practices and listen to their preferences to shift the product paradigm from 'organic' to 'regenerative'.
- Intelligent and circular reuse of products – such as upcycling of by-products – is needed for improving food system efficiency and creating secondary economies.

Part 5. The Future of Food Security for Communities and Cities

To ensure a food-secure future for communities and cities, we must adopt new models and solutions with courage and expedience to fill gaps in the food system.

- We must embrace technologies - such as agrivoltaics - that create synergies with agriculture to amplify positive change.
- Communities must be empowered to grow their own food to support food sovereignty, as well as deliver co-benefits to physical and mental health.
- We need to boost our preparedness for sustained food crises with proactive plans that better guarantee access to food.
- We need to give consumers the knowledge and opportunities to make responsible food choices, and support them to innovate solutions to food problems on the ground.



About The Playbook Authors and Sponsors

Yannick Beaudoin, PhD

Dr. Beaudoin is a senior economist and Director of Innovation for Ontario, at the David Suzuki Foundation.
He brings an 'economics for transition' lens to the Foundation aimed at helping to enable a socially thriving and ecologically sustainable Canada. He applies the art of change and participatory social processes to several themes including: adaptation to uncertain climate futures, embedding indigenous knowledge in policy decision and choice-making, and promoting a transition to a sustainable relationship between society and Nature. From his decade with the United Nations, prior to 2018, he has been facilitating conversations around the world, highlighting solution pathways towards a well-being centric, beyond GDP economic system. Most recently, he has been co-leading the inception of the Well-being Economies Alliance for Canada and Sovereign Indigenous Nations (WEAll Can) to help in the re-imagination of the purpose of an economy.

Dihan Chandra

Dihan is the Founder of The Spent Goods Company. He started his first social enterprise, Organic Lifestyle, to focus on promoting non-toxic alternatives for the home, such as organic pillows, linens, and mattresses. He was later inspired by solutions that made revenue from plastic pollution, cementing his belief that practical solutions to reducing waste while generating profits are within our reach.
One night at his local pub, Dihan asked the question we've all been too shy to ask: What happens to all the grain used to make beer? After learning that most spent grain, especially from smaller breweries, ends up in landfills, The Spent Goods Company was born. The company is currently working with craft breweries to transform their leftover barley grains (spent grains) into delicious food.

Mike Carter

In addition to being the founder of First Green Energy, Mike has been involved with the renewable energy industry for most of his life. He has led teams to develop and operate utility-scale solar, energy storage and hydroelectric projects throughout North America. Under First Green Energy, Mike has returned to his roots, to accelerate the electrification transition in Canada bringing his personal background in farming and applying his professional experience towards expanding agrivoltaics nationally.
Mike has held many roles concurrent to his renewable experience including mining, manufacturing, agriculture, and automotive sectors. For two decades, he also managed his family's farm operations, where he was named Entrepreneur of the Year for Halton Hills in 2013.

Sylvain Charlebois, PhD

Dr. Charlebois is Researcher and Professor in Food Distribution and Policy, faculties of Management and Agriculture; and, the Senior Director of the Agri-food Analytics Lab at Dalhousie University. Before joining Dalhousie, he was affiliated with the University of Guelph's Arrell Food Institute, which he co-founded. Known as "The Food Professor", his current research interest lies in the broad area of food distribution, security and safety. Google Scholar ranks him as one of the world's most cited scholars in food supply chain management, food value chains and traceability.

Phil Fung

Phil is the Founder, President of HiGarden International Inc and a Professional Engineer and Designated Consulting Engineer in Ontario, Canada. Areas of expertise: energy efficient and sustainable buildings design, nature-inspired regenerative buildings design, energy modelling, and LEED certification management. He started his career as an Automation & Robotics Engineer. Using nature as mentor and tool, in 2014, he designed and applied for patent of his Vertical Indoor Aquatic Ecosystem – Vertical Indoor Garden (VIGA™) – based on biomimetic, biophilic, and bio-synergistic design principles. He holds a Bachelor of Applied Science in Mechanical Engineering and Master of Science in Systems Engineering.

Yasmin Glanville

Yasmin is a recognized future and innovation strategist, implementation advisor for leaders, boards, organizations and communities in the Americas and Europe. She specializes in helping clients explore and shape best fit approaches and solutions to thrive in the new realities of a world impacted by Covid 19, climate, technology, inflation, social inequities and more. Backed by 30+ years of international experience as an executive and advisor for and with corporations, government/NGOs and NFPs, Innovation hubs, entrepreneurs and philanthropists she is a sought-after keynote speaker and strategic advisor. In 2011, she founded RSI as a go-to knowledge exchange for senior leaders to rethink sustainability and resiliency as core business priorities vs. a sideline.

Neil Hetherington

Neil joined Daily Bread Food Bank as CEO in January 2018. He began his career in project management at Tridel Construction. In 2000, he made a career change by joining Habitat for Humanity Toronto, as the youngest CEO of a Habitat affiliate in the world. Neil's non-profit experience includes 16 years as CEO of Habitat for Humanity in Toronto and New York City, and two years as CEO of Dixon Hall, a multi-service agency with 240 staff serving thousands of people in Toronto through its social programs, shelters, seniors programs, youth initiatives and community revitalization. Neil holds degrees or certificates from the University of Western Ontario – Huron College, Seneca College, Harvard Business School and the University of Virginia – Darden Business School. He obtained his MBA from the University of Western Ontario's Ivey Business School in 2013.

Brenda Hsueh

Brenda is a Chinese Canadian organic farmer. She has been operating her 40 acre farm, Black Sheep Farm, since 2009. She spent over a decade working in the financial industry in Toronto, before pursuing her dream of regenerative agriculture. Over the years, she has been joined at the farm by her partner, Skyler, and their daughter Emma. They grow organic vegetables for CSA members on a no-till vegetable plot, and practice intensive managed sheep grazing on 20+ acres of pastures. The rest of the farm is planted to trees and has a pond for amphibious life and all those needing a watering hole. The farm priority is to increase biodiversity and habitat, sequestering carbon by keeping living roots in the ground, while also producing nutritious and flavourful food for the farm's community.

Matt Hammond, PhD

Dr. Hammond is the Chief Technology Officer at HiGarden International.
As a systems-thinker working on environmental, conservation and sustainability problems, he works across disciplines – including biodiversity, ecosystem science and agriculture – to develop new urban agriculture technologies. He has worked for Environment Canada, consulted internationally and researched widely in academia. He applies his broad experience to developing insights and solutions that can enable a greener and more resilient future. He has a PhD in Ecology from McMaster University and an MSc in Marine Science from University of Otago, New Zealand.

Sam Kashani

Sam is the Managing Director of Too Good To Go. It is the leading app for fighting food waste and is championing the movement into the Canadian market.
He moved to Toronto as a first-generation immigrant over 23 years ago. His first job in Canada was in the food service industry where he saw, firsthand, how consumer demand for speed and selection produced a consequential increase in food waste! Since then, his love for food has taken him around the world discovering new cuisines, transforming his relationship with food from "love" to "respect". He has held multiple leadership positions in global and scale up organizations and was recognized by Marketing Magazine's "30 under 30" in 2014.

Kate McMurray

Kate is the Education Outreach Coordinator at The Big Carrot Community Market Toronto and a certified nutritionist and healthy food systems advocate. For 10 years her work at The Big Carrot has focused on championing organic agriculture, building better food literacy, and fostering creative partnerships in the community.
The Big Carrot is a worker-owned natural food market committed to local, organic, non-GMO and sustainable food systems since 1983. Its approach to health includes creating and protecting sustainable, robust food systems and facilitating community innovation.

Rod MacRae, PhD

Dr. MacRae is a food policy analyst and associate professor at York University. He is a sought-after expert on health-promoting and sustainable food and agriculture systems. He writes and speaks extensively on these themes in the academic and popular press and consults to government, business and NGOs, and teaches at York. He has a PhD from McGill.

Jess Newman

Jess is the Senior Director of Agriculture & Sustainability at McCain Foods, the world's largest manufacturer of frozen potato products and appetizers. Her team of agronomists and field representatives are responsible for all the sweet potatoes, peppers, onions, zucchini, and other vegetables purchased directly from farmers. They also implement McCain's 2025 sustainability goals related to agriculture: 100% of farmers implementing regenerative practices, 25% reduction in farming CO2 emissions intensity, 15% improvement in irrigation water use efficiency in water-stressed regions, and the launch of three Farms of the Future.

Jess works remotely from her home state of Michigan and travels frequently to support her team (when COVID allows).

Tammara Soma, PhD

Dr. Soma is an Assistant Professor at the School of Resource and Environmental Management (Planning program) at Simon Fraser University and Research Director of the Food Systems Lab. Originally from Indonesia, she conducts research on issues pertaining to food loss and waste, food system planning, access, and the circular food economy. Dr. Soma is a Co-editor of the Routledge Handbook of Food Waste, co-founder of the International Food Loss and Food Waste Studies group. She leads numerous tri-council funded research projects and is routinely featured in international and local media (BBC, CBC, TVO, CTV, Huffington Post and more). In 2021, the Food Systems Lab was recognized as one out of the four women-run projects that are redefining agriculture by the Canadian Organic Grower.

Kimberly Zeuli, PhD

Dr. Zeuli is the founder & managing director of The Feeding Cities Group. She established the Group in 2019 to mobilize the vision for resilient urban food systems while serving as the Senior Vice President at the Initiative for a Competitive Inner City (ICIC).
She holds a PhD in Agricultural Economics and has extensive experience as a researcher and consultant working on food system issues in the U.S. and globally. She has worked in and with corporations, government agencies, philanthropic and non-profit organizations as a thought leader and trusted advisor at the intersection of food systems, disaster risk mitigation and community development.

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If you are interested in discussing this Playbook, engaging our RSI and Partner experts to be a speaker for your events and/or to learning about Rethink Sustainability, send us a note at:
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