



# Summary Report

## **Building a Foundation to Resilient Food Systems in the Fraser Valley Region**

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**Community Research Connections**

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**May 2022**

# Table of Contents

<b>1. Project Background</b>	<b>4</b>
<b>2. Regional Context</b>	<b>5</b>
<b>3. Data Collection and Analysis Approach</b>	<b>6</b>
3.1 Approach to Food System Future Scenario	7
3.2 Approach to Preventing the Food System Future Scenario	9
<b>4. Results and Discussion</b>	<b>11</b>
4.1 Food System Future Scenario	11
4.2 Preventing Food System Future Scenario	12
<i>Physical Infrastructure and Environmental Features - Current Assets</i>	12
<i>Physical Infrastructure and Environmental Features - Gaps and Needs</i>	13
<i>Food System Programs, Policies, and Initiatives - Current Assets</i>	14
<i>Food System Programs, Policies, and Initiatives - Gaps and Needs</i>	14
<b>5. Conclusions, Implications, &amp; Next Steps</b>	<b>15</b>
<b>Appendices</b>	<b>17</b>
Appendix A. List of Attending Organizations	17

## 1. Project Background

The past two years have seen an increase in environmental and socioeconomic shocks that have impacted food systems in the Fraser Valley Regional District (FVRD) (Figure 1). To address these impacts, it is imperative to engage in long-term planning efforts to achieve resilient and sustainable food systems. To support such planning, the Food and Agriculture Institute (FAI) at the University of the Fraser Valley (UFV), in collaboration with the FVRD and Royal Roads University, initiated a community-based participatory research effort,<sup>1,2</sup> in 2021, which explored food systems vulnerabilities, resiliency, and approaches to integrated planning in the region. The research employs integrated planning and systems perspectives to (1) reflect upon the challenges and vulnerabilities that the COVID-19 pandemic has revealed about local and regional food and farming systems, and (2) explore ways of increasing local/regional resilience to future shocks (e.g. climate change impacts, economic recessions, mass migration) in the Fraser Valley region.

Drawing from the professional/expert knowledge and lived experiences of stakeholders and community members in the Fraser Valley this summary report presents the outcomes of the third workshop in the three-workshop series. The first workshop (summer, 2021) reflected on what COVID-19 has taught us about food systems vulnerabilities by identifying and examining food system impacts arising from the pandemic.<sup>3</sup> The second workshop (fall, 2021) built off the first to explore various environmental and socioeconomic/sociopolitical hazards that have and/or are likely to impact the region's food system, as well as the food system components that are most vulnerable to these impacts and explanations for why.<sup>4</sup> Instead of 'reinventing the wheel', the aim of the project was to build upon existing efforts of government, industry, and civil society organizations aimed at improving food resilience in the region, such as the [Climate & Agriculture Initiative, BC - Fraser Valley Adaptation Strategies Plan](#), [FVRD and FoodMesh eat away at food waste](#), and [FVRD Clean Economy in the Fraser Valley Resource Guide](#).

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<sup>1</sup> Newell, R., Picketts, I.M., & Dale, A. (2020). Community systems models and development scenarios for integrated planning: Lessons learned from a participatory approach. *Community Development*. doi: 10.1080/15575330.2020.1772334

<sup>2</sup> Hacker, K., Tendulkar, S. A., Rideout, C., Bhuiya, N., Trinh-Shevrin, C., Savage, C. P., Grullon, M., Strelnick, H., Leung, C., and DiGirolamo, A. (2012). Community capacity building and sustainability: outcomes of community-based participatory research. *Progress in Community Health Partnerships*, 6(3), 349-360.

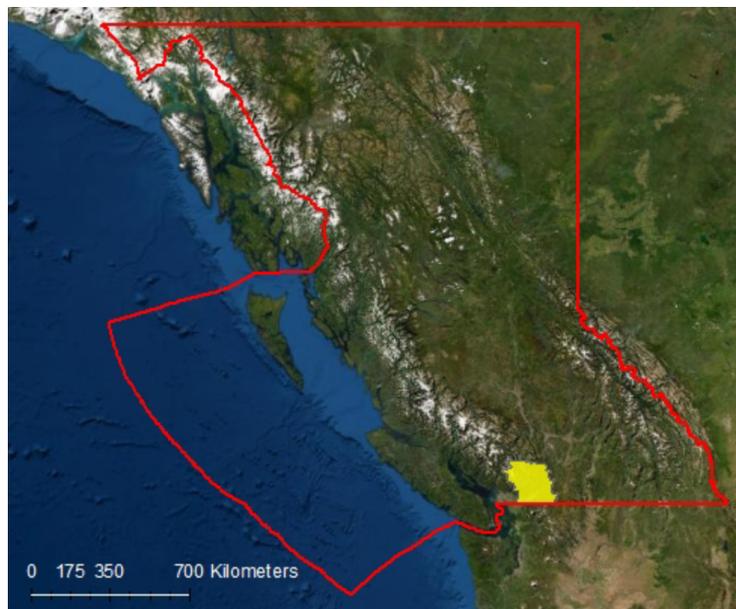
<sup>3</sup> Dring, C., & Newell, R. (2021). *Fraser Valley Food System Vulnerability Workshop: Summary Report*. <https://doi.org/10.13140/RG.2.2.34634.08648>

<sup>4</sup> Dring, C., & Newell, R. (2022). *Mapping Food System Impacts, Hazards, and Vulnerabilities in the Fraser Valley Region Workshop: Summary Report*. <https://doi.org/10.13140/RG.2.2.31197.69604>

## 2. Regional Context

The project is based in the Fraser Valley Regional District (FVRD) in the southwest of British Columbia (BC), directly east of the province's most populous metropolitan region of Metro Vancouver (Figure 1). The FVRD comprises eight electoral areas (A through H), six municipalities, and 30 First Nations communities.<sup>5,6</sup> The region has a diverse geography, and encompasses a wide range of community types, from urban to rural and remote.

**Figure 1.** Location of Fraser Valley Regional District (yellow) within British Columbia (red). Data sources: BC Data Catalog, Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, and ISN



The region is one of the most agriculturally productive areas in Canada, and the agriculture sector provides the basis for strong economic and cultural relationships and identities within and among urban, peri-urban, and rural communities. Multiple agricultural organizations and resources are located within the region, including the Pacific Agri-Food Research Centre (Agriculture and Agri-Food Canada), the Abbotsford Agriculture Centre (BC Ministry of Agriculture, Food and Fisheries), the UBC Dairy Education and Research Centre, and the UFV Agriculture Centre of Excellence. Additionally, the BC Agriculture Council is based in the Fraser Valley, which is a network organization representing agricultural industries and several commodity-specific industry associations and organizations.<sup>7</sup> The region also has a variety of food assets - ranging from food banks, community meal programs, food retailers, food processors and distributors, and farmers.

<sup>5</sup> FVRD (2019). What is the FVRD? Retrieved from <https://www.fvrd.ca/EN/main/about-the-fvrd/what-is-the-fvrd.html>

<sup>6</sup> FVRD (2020). First Nations. Retrieved from <https://www.fvrd.ca/EN/main/about-the-fvrd/first-nations.html>

<sup>7</sup> British Columbia Agriculture Council <https://www.bcac.bc.ca/>

Economically, the Fraser Valley capitalizes on the proximity of nearby large markets such as Metro Vancouver, as well as access to transportation infrastructure and networks (e.g, highways, rail, and air), resulting in the highest gross farm receipts among any place in the province, with over \$1.4 billion in 2015.<sup>8</sup> The Agricultural Land Reserve (ALR) comprises 5.1% of the region's land base, and over 61,000 hectares are being used for farmland (according to 2016 figures).<sup>8</sup> This includes roughly 2,700 farms producing a variety of crops: berries, dairy, poultry, forage, mushrooms, and greenhouse vegetables.<sup>9,10</sup>

### 3. Data Collection and Analysis Approach

The project consisted of three workshops held between July 2021 and March 2022. The first workshop explored food system vulnerabilities and impacts in the FVRD from the COVID-19 pandemic. The second mapped and assessed food system vulnerabilities from multiple environmental, socioeconomic and sociopolitical hazards. The third workshop (i.e., the focus of this report) identified gaps in, and ways to, scale-up/enhance existing food system initiatives, programs, and assets. The goal was to stimulate thinking on how to build long-term food system resilience. The research project employed an emergent approach, allowing for flexibility between community concerns and needs as they were identified over the course of the project.

The third workshop occurred on March 3rd, 2022, from 1 to 4 pm, via Zoom, and it consisted of a total of 12 participants from non-profit organizations, food businesses, local government staff and elected officials, and health authority staff (see Appendix A for attendee organizations). The absence of stakeholders with insights into food production, distribution and processing, and retail are noted and warrant follow up engagement.

Workshop activities were facilitated using the CoLabS platform,<sup>11</sup> which included Padlet-based, digital 'working tables' for providing thoughts and comments. The workshop began with the facilitators introducing the agenda (Table 1), and the research findings to date. The workshop objectives were presented to the participants, and these were to:

1. Identify high-level scenario content of a plausible food system future,
2. Identify assets of and gaps in current food system efforts/ initiatives, and
3. Evaluate project activities and identify potential next steps.

<sup>8</sup> Fraser Valley Regional District. (2017). Regional Snapshot Series: Agriculture. Agricultural Economy in the Fraser Valley Regional District. December 2017 update. <https://www.fvrd.ca/assets/About~the~FVRD/Documents/RGS/AgricultureSnapshot.pdf>

<sup>9</sup> Statistics Canada. (2014). Census of Agriculture and BC Ministry of Agriculture Fast Stats, Agriculture, Aquaculture & Food.

<sup>10</sup> Statistics Canada. (2012). 2011 Census of Agriculture, Farm and Farm Operator Data, catalog no. 95-640-XWE.

<sup>11</sup> Jost, F., Newell, R., & Dale, A. (2021). CoLabS: A collaborative space for transdisciplinary work in sustainable community development. *Heliyon*, 7(2), e05997. <https://doi.org/10.1016/j.heliyon.2021.e05997>

**Table 1.** Building a Foundation to Resilient Food Systems in the Fraser Valley Region workshop agenda

Order	Activity Type	Description
1	Researcher Presentation	Introductions to the Project and Workshop Objectives
2	Researcher Presentation	Summary of Key Findings from Workshops 1 & 2
3	Participant Input	Food System Future Scenario Activity
4	Participant Input	Preventing the Future Scenario - Maintenance, Change, and Gaps
5	Participant Input	Discussion - Participatory Action Research Project Experience
6	Researcher Presentation	Closing and Next Steps

### 3.1 Approach to Food System Future Scenario

The facilitators introduced a food system future scenario (see below) that contains elements from the previous two workshops. The scenario was intended to demonstrate a worst-case situation, and the participants were asked to apply a prevention approach to avoid this scenario. Rather than presenting an ideal-type future as done in other scenario planning research, this workshop identified and examined the characteristics and processes of a worst-case scenario. Such an approach provided a way of synthesizing and contextualizing the concerns and issues identified in the previous workshops with respect to plausible pathways and futures, which can be addressed and avoided through long-term planning efforts.

#### Food System Future Scenario

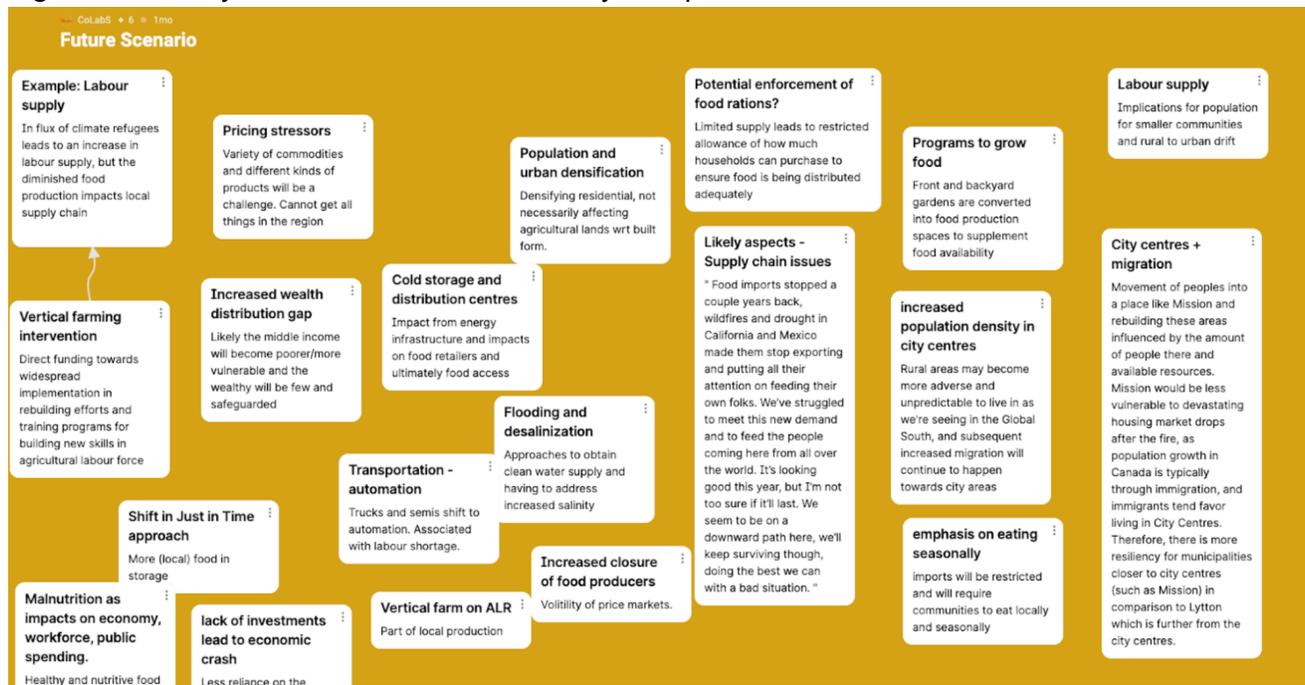
*“The year is 2042, it has been a better year than most, although nowhere near as good as it was back in the early 2000s. Heck, each year the dry season gets longer, and the rains only come during a few months in the winter. It's becoming harder and harder to get water for people, the animals, and the crops. Folks are thirsty and hungry.*

*Last year, fires came right through downtown Mission, all the way to the riverbanks. All the supermarkets and homes, gone. Not too sure about rebuilding or if we should focus our efforts elsewhere. People have been right to complain that we could've done something about the dikes back in 2024, when things were better. Now the highways are so damaged we can barely move trucks let alone getting people around the region anymore. It's made it harder to get the inputs we need for farming, fuel, fertilizers, seeds, everything's gotten more expensive which makes food prices go up at the stores.*

*Food imports stopped a couple years back, wildfires and drought in California and Mexico made them stop exporting and putting all their attention on feeding their own folks. We've struggled to meet this new demand and to feed the people coming here from all over the world. It's looking good this year, but I'm not too sure if it'll last. We seem to be on a downward path here, we'll keep surviving though, doing the best we can with a bad situation."*

After presenting the scenario to the group, participants used the CoLabS digital working table (Figure 2) to provide thoughts on its plausibility, additional narrative embellishments, and/or missing food system impacts and pathways occurring in this future. Participants were asked to identify the kinds of interventions that food system actors might be employing during this future scenario. These thoughts and comments were elaborated on and further explored through plenary discussions (see below).

**Figure 2.** Food System Future Scenario Plenary Group Discussion

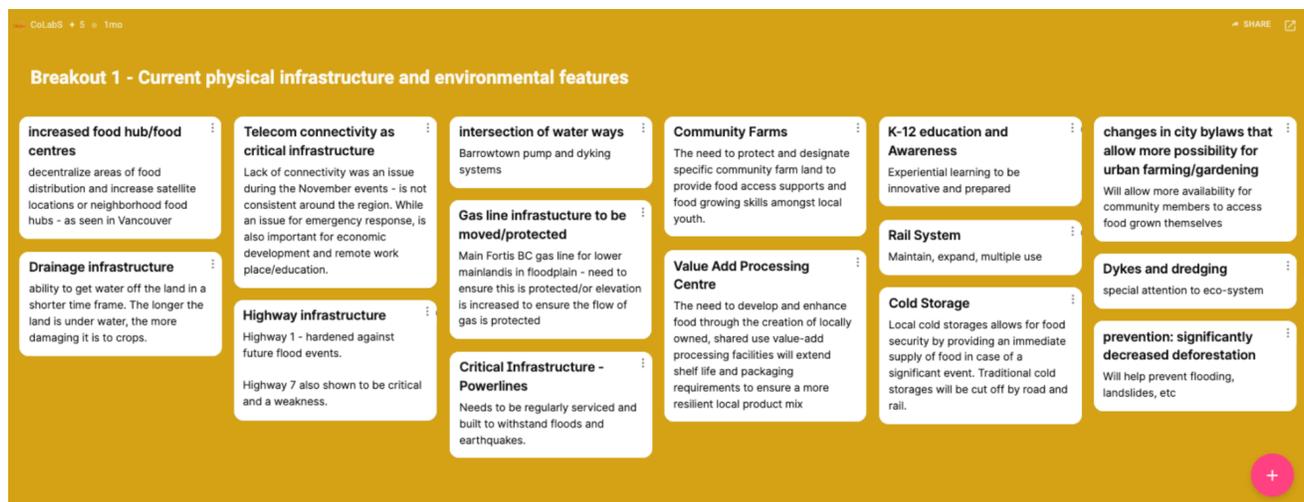


### 3.2 Approach to Preventing the Food System Future Scenario

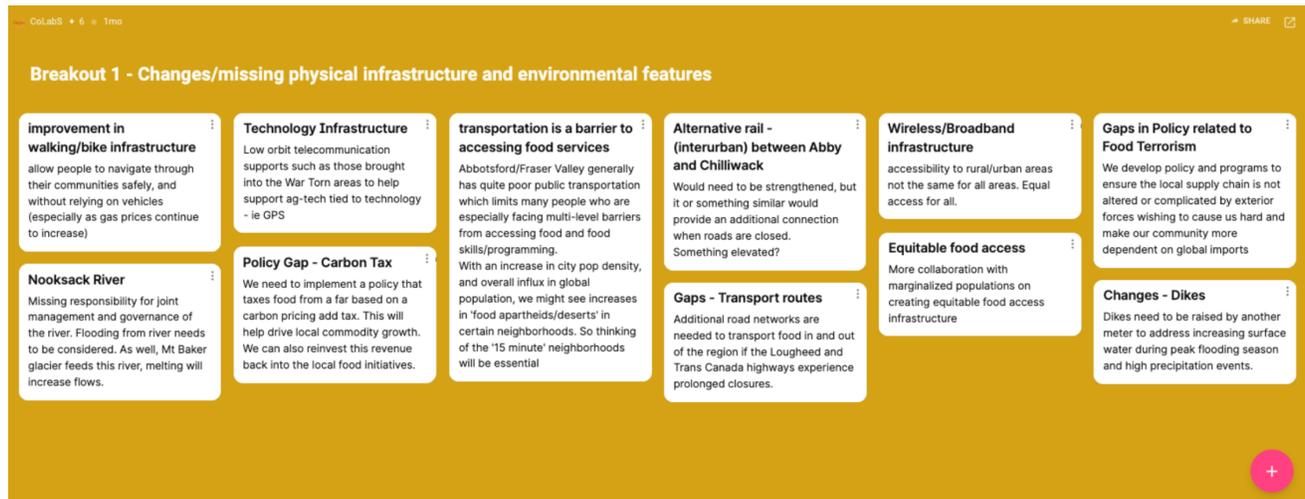
The ultimate objectives of the workshop were to identify ways that the worst-case scenario could be prevented including priority approaches for building food systems resilience. To this end, a second set of activities were held that focused on identifying critical food system gaps, much needed interventions, and supports. Food systems consist of a complexity of system components and interaction effects, and to create a clear and feasible scope for this exercise, the activities centred on two categories of gaps, interventions, and supports: 1) physical infrastructure and environmental features; and 2) food system programs, initiatives, and policy approaches.

For the physical infrastructure and environmental features category, participants were asked to identify the existing critical infrastructure (e.g., roads, sewer mains, dykes) and environmental features (e.g. rivers, drainage ditches, farmland) that are important for preventing the worst-case scenario (Figure 3). Participants were then asked to explain how the identified infrastructure or environmental features need to be protected and/or maintained to prevent the scenario. Participants were subsequently tasked with determining how the identified elements might need to be changed or enhanced to effectively prevent the scenario (Figure 4). Finally, participants identified gaps in critical physical infrastructure and interventions in environmental features to highlight areas of concern in terms of where and how future hazards may exert significant impacts.

**Figure 3.** Current Physical Infrastructure and Environmental Features

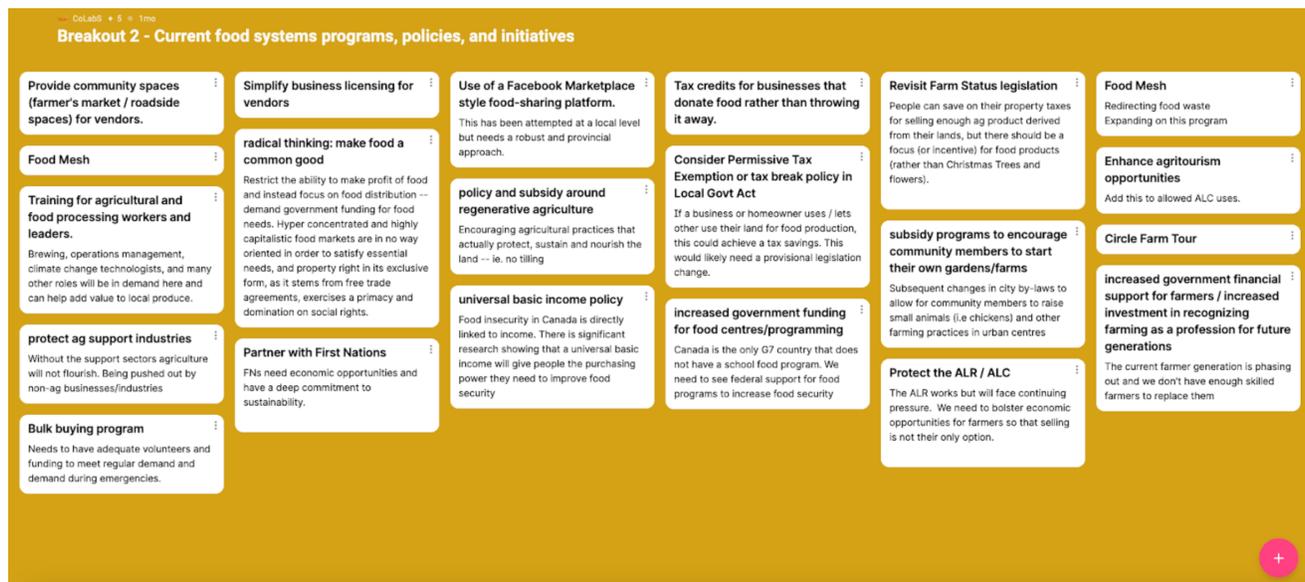


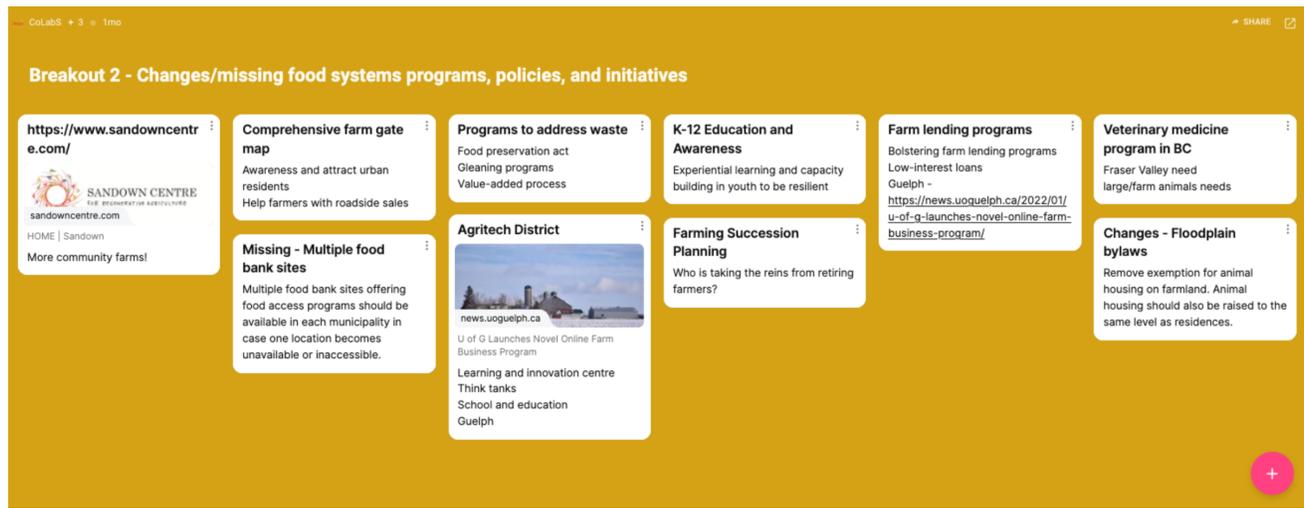
**Figure 4.** Changes and Gaps in Physical Infrastructure and Environmental Features



For the programs, initiatives, and policy category, participants were asked to identify current food system programs (e.g., bulk buying program, food service employee education program) and legislative/policy approaches (e.g., floodplain bylaw, AgRefresh strategy) that are important for preventing the worst-case scenario. They were asked to explain how the program, initiative, bylaw, policy, etc. needed to be protected and/or maintained to prevent the future scenario. Participants then were tasked with determining how the identified programs, policies, or legislation might need to be modified or improved to effectively prevent the scenario and to explain their responses (Figure 5). Finally, participants identified gaps in food system policies, programs, and efforts to determine the range of interventions needed to achieve more resilient food systems in the region.

**Figure 5.** Current Food System Policies, Programs, Initiatives, and Legislation



**Figure 6.** Change and Gaps in Food System Policies, Programs, Initiatives, and Legislation

## 4. Results and Discussion

### 4.1 Food System Future Scenario

Participants expressed feeling strong reactions, such as anger, hopelessness, feeling overwhelmed with the immensity of the problems, to the food system scenario. Participants also added several aspects and considerations to the scenario such as health and wellness impacts arising from chronic food insecurity (limited food access and decreased affordability). It was noted that chronic undernutrition and inconsistent food access has cascading impacts, particularly in terms of child and youth development, diminished employability and barriers to employment, and increasing costs to healthcare. Furthermore, the increased allocation of resources to address health impacts was predicted to exert impacts on government budgets, affecting education, economic development, and infrastructure.

Other concerns voiced were reduced food supply, which participants noted may lead to the state imposing food rations and controlling the distribution of food to households. Participants also commented on the increased automation of trucks and semis and the loss of employment. Furthermore, concerns were raised about increased urban densification and population densities due to migration from larger population centres (e.g., Vancouver) to the Fraser Valley. The increased population and urban development in turn may have adverse impacts on adjacent peri-urban and rural areas.

Interventions proposed for preventing the food system scenario included an increased emphasis on seasonal eating as food imports become more restricted. Relatedly, participants discussed potential improvements in local agricultural production through technologies such as vertical farming in the ALR and water conservation

technologies/practices. The current 'just in time' approach to food distribution was also discussed with interventions aimed at prioritizing and focusing on building local capacity in both production and storage.

## **4.2 Preventing Food System Future Scenario**

This section presents key areas of food system assets that require maintenance, mobilization, and/or enhancement to prevent the worst-case scenario. These areas are physical infrastructure, environmental features, and food systems programs, policies, and legislation. To build a strong foundation for comprehensive food system planning and resiliency, participants identified and assessed the robustness of what is currently in place and then considered the kinds of modifications and enhancements that might be needed to strengthen resilience.

### ***Physical Infrastructure and Environmental Features - Current Assets***

Critical physical infrastructure identified by participants included transportation, energy, diking/drainage, and food infrastructure. Transportation infrastructure of importance includes railways, key highway routes such as the Trans Canada and Lougheed highways, and bridges. Participants noted the importance of being able to move farm products and workers in and out of the region. Transportation infrastructure was identified as needing upgrades to prevent incapacitating damage during (subsequent) earthquakes and flooding. Railways were seen as vulnerable to erosion and landslides; addressing this vulnerability requires reducing deforestation and engaging increasing available forest cover and intact ecosystems. Participants noted the additional need for expansion of diverse and varied transportation networks, including alternative highway and road routes, designated bike/walking/rolling routes, and inter-urban rail lines.

Energy considerations discussed include energy sources (e.g. hydroelectric generators and reservoirs) and transmission systems (e.g. gas pipelines and power lines). Both were seen as critical and linked to other physical infrastructure such as cold storage facilities and indoor growing spaces. An area of concern noted is that the main Fortis BC gas line for the entire Lower Mainland area runs through the floodplain, with comments about how this line needs to be protected from future shocks to ensure a reliable gas supply.

The discussion highlighted concerns around flooding, with participants noting the importance of ensuring that pump stations and dikes are maintained and functioning. Concerns were expressed around future extreme precipitation events, and it was noted that dikes need to be raised by an additional meter for anticipated higher peak flows. In addition, it was noted that flooding issues could be exacerbated due to sediment loading from

erosion and dredging of waterways, as these can lead to disruption and diversion of water flows.

Food infrastructure discussed includes a wide variety of community farms (e.g., communal growing spaces and food grown for charitable purposes) and year-round growing spaces, such as greenhouses, food hubs and distribution centers, farmworker housing, livestock barns, and food storage. Participants noted the important linkages between accessing food storage facilities via transportation routes. Disruptions to highways and rail can significantly hinder food supply and access.

### ***Physical Infrastructure and Environmental Features - Gaps and Needs***

The lack of value-added processing centres was identified as a gap, and addressing this gap could be valuable for extending the shelf lives of local food products. Additionally, decentralized and well-distributed cold storage, food hub sites, and food banks could improve food security during significant hazard events, particularly if transportation routes are cut off. Food bank sites could be repurposed to serve as emergency food centres during times of crises. Concerns were raised around transportation barriers in relation to accessing food services and how this could result in increases in food deserts. Furthermore, it was noted that water storage/retention infrastructure is critical in the face of fire events and droughts, and improvements to this infrastructure could contribute to resilience.

Telecommunication access is inconsistent throughout the region. The Fraser Valley encompasses areas that are rural and remote, which is an issue for emergency responsiveness. Participants noted that low-orbit telecommunication satellites can be useful for increasing access in rural/remote areas to communications technologies, as well as for supporting application of digital technologies in agriculture (i.e. GPS and remote sensing).

Accommodations for seasonal and temporary workers were seen to need improvements if growing season temperatures become too hot. Health and welfare of agricultural workers and animals were of concern. This could be addressed via alterations to the building code for worker housing and livestock facilities.

To reduce vulnerability, participants suggested that deforestation activities should be curtailed, particularly in upstream areas where vegetation removal can result in significant downstream impacts. To prevent erosion of banks along waterways, participants suggested vegetative buffers and plantings along riparian zones. Participants also identified the impacts of diking and dredging on ecosystems across the region.

### ***Food System Programs, Policies, and Initiatives - Current Assets***

Food production and having farmers on the land is an important component to resilient food systems. Participants noted the importance of existing land access programs, such as Young Agrarians BC Land Matching Program and the Ministry of Agriculture's succession planning initiatives. In terms of improvements, changes were suggested for lowering administrative barriers for food vendors (e.g. farmgate and roadside sales), getting local produce into existing retail outlets, and enhancing protections for vital agricultural support industries (e.g., drainage, irrigation, seed, fertilizer). The ALR was identified as an important asset for protecting agricultural land; however, participants expressed desire for changes to the ALR regulations. It was noted that the food system could be strengthened by allowing more food processing activities on ALR land. Other suggestions included further emphasizing/incentivizing food production over (for example) ornamental plants, regulating the price of farmland, limiting development on adjacent land, and developing and widely implementing inclusion policies similar to the City of Surrey's policy where for every one acre ALR exclusion apply for, the City must also apply for every one acre excluded from the ALR, two acres are to be included.

Food provisioning programs were highlighted as key assets across the region, in particular Food Mesh and Archway's Bulk Buy Collective initiatives. Market-based initiatives that could support food system resiliency include Facebook Marketplace and farming and food cooperatives. These could be further linked with public awareness initiatives such as Circle Farm Tours and agri-tourism. Caution is advanced though as food redistribution programs do not address over-production. This can result in recipient organizations taking on additional responsibilities (e.g. volunteer recruitment and retention) to sort donations and costs for landfill tipping fees.

### ***Food System Programs, Policies, and Initiatives - Gaps and Needs***

The discussion on gaps in food system programs, policies, and initiatives focused on equitable food systems and the importance of applying a food and social justice lens to the outcomes of food system planning. Inequities around food access occur among rural and remote communities and across populations experiencing poverty and homelessness. Participants noted promising initiatives such as national school meal<sup>1</sup> programs, government funding for food, universal basic income, and a national food policy as key elements that could address these inequities in food access and distribution.

Gaps were also identified around education, with some comments recommending integrating food system issues into primary and secondary school education. Participants also stated the need for more skills-based training to support the agricultural sector, such as a veterinary medicine program and in general agricultural production. Furthermore,

building food system innovation was highlighted as a key need, and this could be done through university partnerships, research and development centres (e.g., an agri-tech district, food innovation center, and food think tanks), and greater investment in research and extension to farmers and food initiatives. Public awareness and support were also noted as important to food system resilience.

A final gap identified related to government support, and participants noted a need for increased government funding and leadership. Such support could include incentives and subsidies for regenerative and agroecological farming practices and systems, permissive tax exemptions for people using land (not just farmland) for food production, enhanced funding for urban food production, credit and lending programs for farms, and farm business programs. Some participants stated a role for the government to restrict profiteering from exploitation of the food system (e.g., cheap labour, price squeeze on farmers, country estates). There is a stated need for ongoing review of policies to allow local governments to respond quickly to changing conditions, as seen during the pandemic, flooding, and wildfires. Finally, discussions highlighted the importance of inter-governmental collaborations and partnerships between neighboring regions, countries, and First Nations. Participants highlighted the importance of ensuring that wild food sources and traditional food ways are protected for Indigenous communities.

## **5. Conclusions, Implications, & Next Steps**

In this workshop summary report we have presented key findings from the third and final workshop of the Vulnerabilities and the Future of Food project. Through facilitated, participatory activities, stakeholders explored a food system future scenario and mechanisms to prevent this scenario by leveraging key assets that currently exist in the Fraser Valley region. Participants identified a range of critical physical infrastructures, environmental features, and food system programs, policies and initiatives that could be scaled up and out to address food system vulnerabilities identified in the previous two workshops and synthesized within the future food system scenario. Additionally, participants noted gaps that would address vulnerabilities in transportation of goods and people, farmland access, food storage, funding supports, and decentralization of food access sites. We note the importance of drawing from existing and current initiatives as a platform to address complex challenges, such as multiple, interconnecting hazards and food system vulnerabilities. It is vital to draw attention to critical components of the food system and identify what makes said components vulnerable and what measures may address these vulnerabilities.

While the project deliverables do not include an integrated food system resiliency plan, the work conducted to date provides foundational analyses, issue identification,

and critical food system assets that can form the basis of future planning design. This work can inform the development of a food system resiliency plan, which would be a key next step to strengthening food systems in the Fraser Valley. Based on this work, the report highlight three critical considerations for moving forward with long-term food system planning:

1. Apply a social justice and equity lens, acknowledging that those who continue to be most impacted by exogenous shocks (COVID-19, drought, flooding) are the central category to gauge food system interventions.
2. Identify co-benefits with other priorities and needs in other sectors (e.g., transportation planning, climate change adaptation, emergency preparedness) by integrating a food lens into these planning areas.
3. Integrate food system initiatives across the region, as there are municipalities implementing actions that could be coordinated through a regional strategy (which ideally could be aligned with provincial and other regional efforts).

## Appendices

### Appendix A. List of Attending Organizations

University of the Fraser Valley
Fraser Valley Regional District
Archway Abbotsford Food Bank
City of Abbotsford
City of Mission
Community Futures/FRESH Network
Fraser Health Authority
Mission Food Coalition/FRESH Network