# Exploring Food Systems in the Comox Valley through a Climate-Biodiversity-Health Lens:

## Preliminary Analysis and Initial Insights


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## 1. Introduction

*The Climate-Biodiversity-Health Nexus* research project aims to improve integrated community sustainability planning in British Columbia and beyond. The purpose of the project is to develop and test a planning framework that consists of three strategic areas that are critical to sustainable community development:

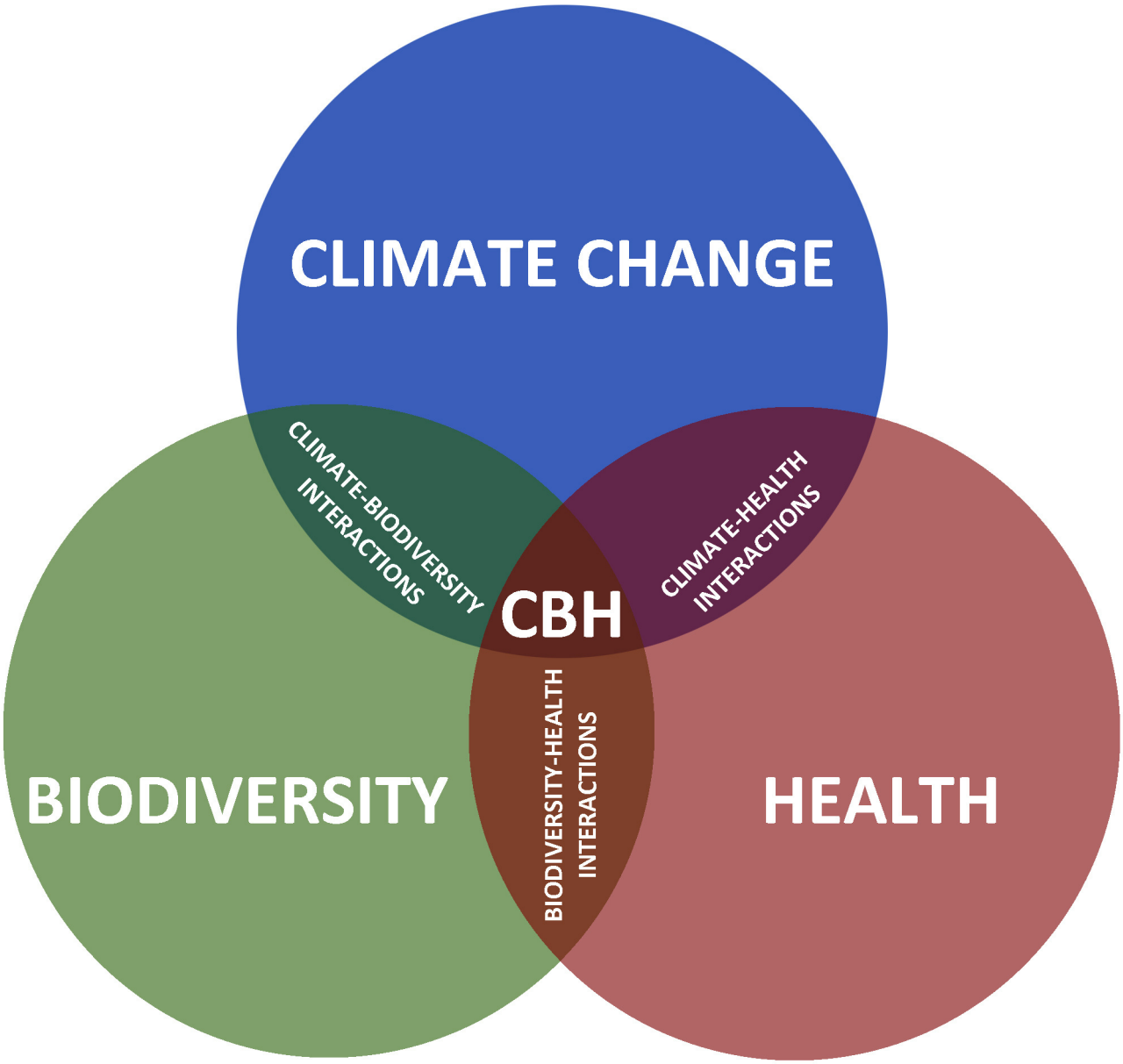


**Figure 1.** ***The climate-biodiversity-health (CBH) nexus***

The purpose of the climate-biodiversity-health (CBH) nexus framework is to help communities explore and better understand how strategies, policies, and actions within different planning areas align or conflict with imperatives for sustainable development. In the case of this research, the framework is being developed and applied to food systems in the Comox Valley region.

The research uses a community-based approach that engages stakeholders and government in the Comox Valley, British Columbia, to build an understanding of how communities can better engage in integrated sustainable community development planning, with a specific focus on food systems. The research aims to produce practical outcomes, such as frameworks, models, and tools for practitioners to use for their planning needs. The project involves three main phases:

- **Phase 1** develops the CBH framework using a case study approach that involves conducting interviews and examining success, challenges, and relationships among climate action, biodiversity conservation, and community health objectives and strategies in the Comox Valley.

- **Phase 2** involves creating system maps that capture relationships between strategies, benefits, trade-offs, and challenges within the CBH nexus, and through community workshops examining how different local food systems strategies potentially align or conflict with climate, biodiversity, and health objectives.

- **Phase 3** consists of workshops that gather researchers, collaborators, and participants to discuss research findings and explore challenges and opportunities for integrated food systems planning and policy.

This report provides early insights from the interview work done in the first phase, illuminating how CBH strategies and objectives are interconnected with one another, food systems, and other community priorities. A key insight from the preliminary analysis is the importance of collaboration among all stakeholders in planning and policymaking and how a lack of this collaboration can create challenges in achieving sustainability objectives. The report begins with the context of the project and a description of the Comox Valley. Then, the Phase 1 research methods and some key insights from a preliminary analysis are detailed. The report concludes with a discussion on next steps for this project.

## 2. Background

The Intergovernmental Panel on Climate Change (IPCC) predicts the world will warm by 1.5 °C by 2052.[1] Such warming will result in new weather conditions, such as shorter and warmer winters, longer summers, and greater variations in precipitation,[2] and these changes have implications for food systems. In some areas, an increase in the growing season length will be experienced,[3] but climate change will also have catastrophic impacts on natural and ecological systems through increased temperatures in most land and ocean regions, heavy precipitation events, extreme heat events, and droughts.[1] Therefore, although some places may experience some benefits (e.g., longer growing seasons), food systems are ultimately highly vulnerable to the changing climate.

**What are food systems?** Food systems consist of all activities and actors connected to the production, processing, distribution, consumption, and disposal of food. These systems exist at different levels, from global to local,[4] and are tightly connected with environmental sustainability, forming "bidirectional" relationships. Going one direction, the food system is highly influenced by (and vulnerable to) environmental changes and issues, such as soil and water pollution, climate change, ecosystems degradation, water shortages, and soil infertility.[5] Going the other direction, activities performed in food systems affect the environment, with current agri-food practices contributing to environmental issues such as topsoil loss, food packaging waste, greenhouse gas (GHG) emissions, and water pollution.[6]

**How do food systems relate to critical sustainability issues?** Productive agriculture relies on healthy ecological conditions, and food production is dependent on environmental factors like the quality of soil and water and the functioning of soil ecosystems and biodiversity.[7, 8] However, agricultural production is simultaneously the greatest threat for species due to its water usage (i.e., 90% of total water usage), considerable land-use (i.e., about 40% of ice-free land surface), and harmful inputs such as pesticides and fertilizers that impact freshwater and coastal ecosystems.[9, 10] In addition, food waste contributes to GHG production through methane production in landfills and fossil fuel usage in transporting/processing waste, which impacts the environment and climate change.[11]

**What are major challenges faced by food systems?** Food systems are experiencing challenges in terms of their resilience and long-term sustainability. In North America, agricultural industrialization has led to reductions in crop diversity, increased pesticide usage, and loss of soil fertility.[12] In addition, farmland trends in Canada indicate that growth is occurring primarily with the large farms, and the agricultural landscape in the country is tending toward consolidation, consisting of fewer and larger farms and experiencing a decline in medium- and small-sized farms.[13, 14] Such trends impact food systems by increasing distances between places food production and consumers, resulting in long supply chains. It also contributes to issues related to larger farms being prioritized over small farms with respect to policy and regulation-making, creating challenges for small farms to survive, let alone thrive.[13]

**How can integrated approaches to planning and policy enhance food systems?** Developing sustainability food systems is both critical and a complex challenge. It is important to consider the economic, social, cultural, and ecological dimensions that surround food and nutrition, as well as ways of safeguarding the biophysical and socioeconomic factors that support food security. Transitioning toward sustainable food systems requires integrated approaches to planning that recognize the ways agri-food activities and strategies relate to critical environmental and socioeconomic issues and objectives. Food production not only

can intensify issues like climate change, biodiversity loss, and water or air pollution, but it is also extremely vulnerable to the impacts of these issues. For example, climate change impacts can reduce viable agricultural land, yield, and quality, which ultimately can result in increases in food prices and impacts to (in particular) economically vulnerable populations. Integrated perspectives are also useful for identifying trade-offs. Converting natural spaces to agricultural lands can increase food production in the short-term; however, such conversions can further contribute to climate change due to a loss of carbon sequestration and storage potential, as well as impact biodiversity and critical ecosystem services through habitat loss.[15]

**How does this research aim to improve integrated food systems planning?** This research examines food systems issues using an integrated planning lens, specifically a climate, biodiversity, and health lens, that is, the CBH nexus. The importance of understanding relationships among climate change, biodiversity, and food systems have been discussed above, and the CBH nexus also includes linkages to health to capture the social and economic dimensions of sustainability. For example, sustainable food systems planning requires identifying and examining food deserts, which are areas where local food availability is scarce and/or unhealthy, and where residents will consume lower-nutrition foods instead of traveling longer distances to healthier foods, resulting in increased risks of nutrition-related health issues.[16] Through a CBH lens, food systems issues and strategies can be examined in terms of their critical environmental and socioeconomic features and relationships.

## 3. The Regional Context

Comox Valley region is located on Vancouver Island, approximately 230 km north of Victoria, British Columbia (Figure 2). It supports a population of over 72,000 people, and ecompasses an area of about 1,700 $km^2$, including three municipalities (Comox, Courteney, and Cumberland), three electoral areas, and K'ómoks First Nation.[17] Comox Valley is an agriculturally active area. The Agricultural Land Reserve (ALR) constitutes about 14% of the Comox Valley region (23,429 hectares), and includes both small and large farmlands.[18]

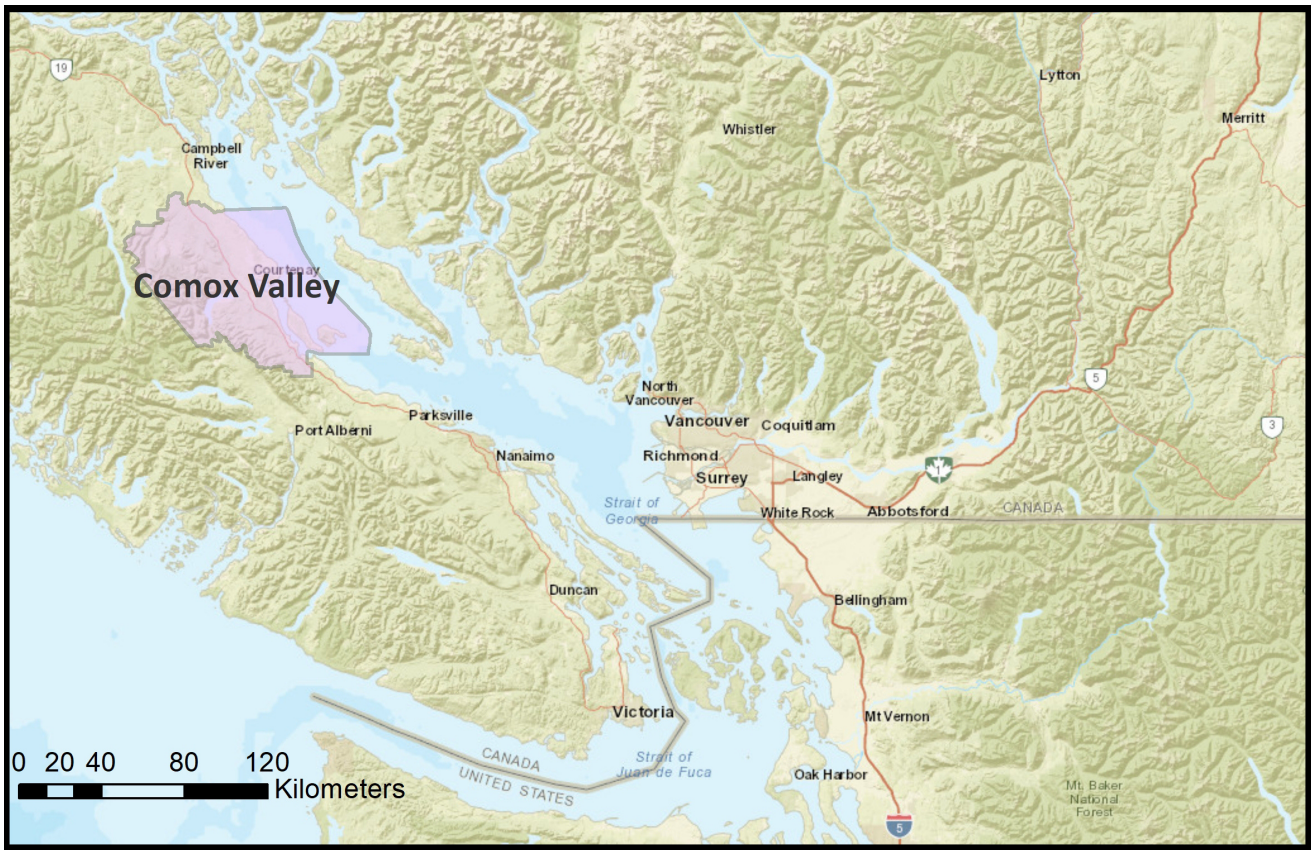


**Figure 2. Map of the Comox Valley region**
Sources: BC Data Catalogue, Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, METI, NGCC, OpenStreetMap

## 4. The Research

This report focuses on Phase 1 of The Climate-Biodiversity-Health Nexus project, which involves conducting and analyzing a series of semi-structured interviews to gain understanding about the strategies in the Comox Valley food system and their co-benefits and trade-offs with local/regional climate action, biodiversity conservation, and community health objectives. A semi-structured interview approach was used.[19] Such an approach enables a flexible structure for managing interviews, allowing interviewees/researchers to explore relevant ideas and materials to gain rich data and insights. Semi-structured interviews make space for longer responses to questions that particularly interest interviewees, as well as follow-up questions about topics and ideas that warrant further exploration.

Understanding that food systems are complex and multi-scalar, the research reached out to local, regional, and provincial government actors and a diversity of "food systems stakeholders" in the Comox Valley. The latter includes a variety of organizations and actors,

who work in areas related to food, climate action, biodiversity conservation, and health, such as NGOs, community leaders, and community associations. Through both the interview process and an online search, an impression of the range of organizations and actors in the Comox Valley CBH-and-food system was gained, which is featured in Figure 3.

Note that Figure 3 is not meant to be understood as a list of participating organizations in the interviews. In addition, the intention of the figure is illustrate the range and diversity of actors and stakeholders in the Comox Valley CBH-and-food system; however, such systems are highly complex, and the figure does not exhaustively capture all the actors and stakeholders within the system.

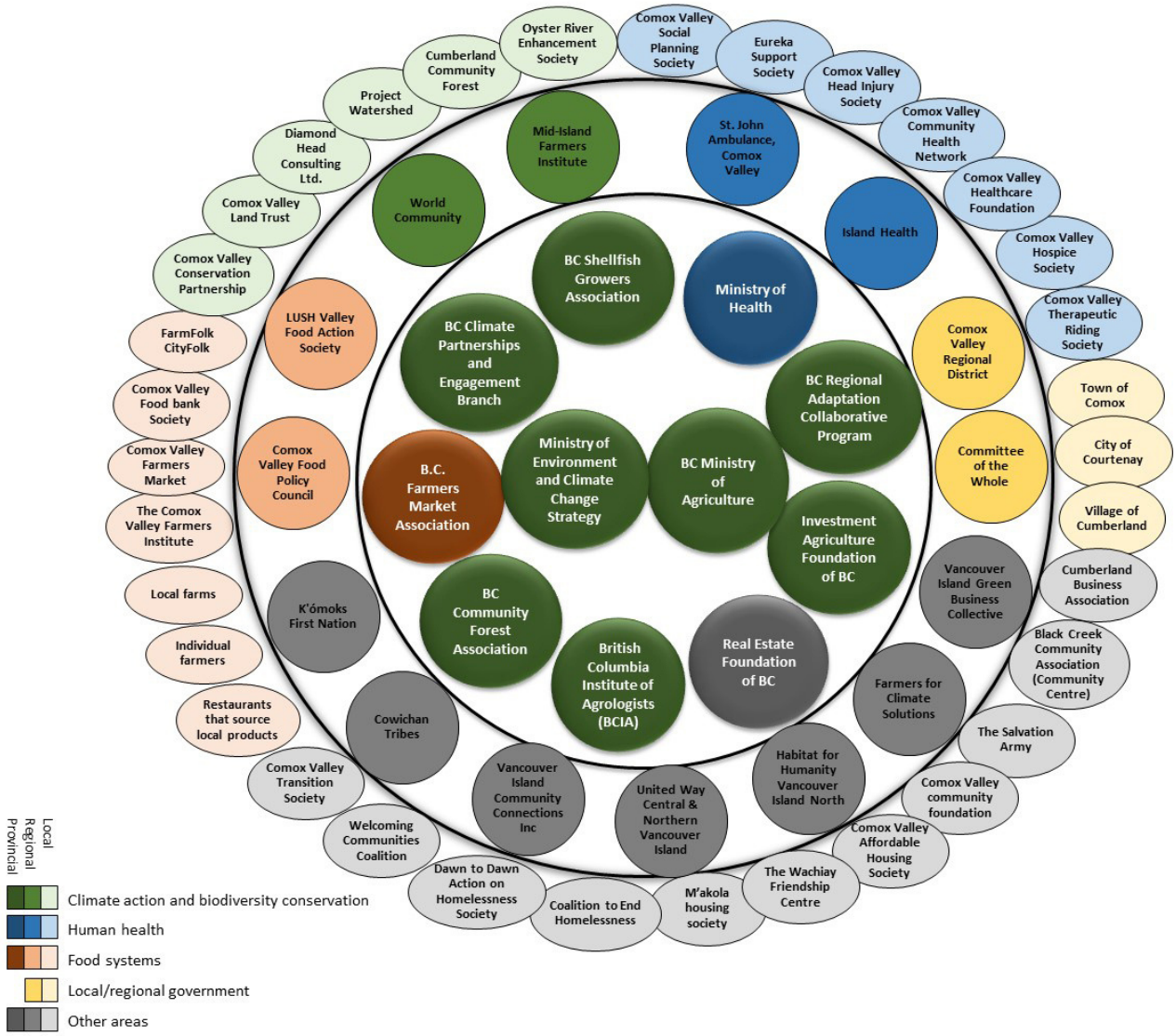


**Figure 3.** ***Organizations involved in Comox Valley's food system and climate-, biodiversity-, health-related work.***

The interview participants engaged in this research, responded to the questions based on both their professional knowledge and lived experience in the Comox Valley. As noted, food systems and CBH issues are complex and multi-scalar; thus, although most interviewees worked at local, community levels, some regional- and provincial-level actors were also engaged (Table 1). Participants were initially identified through an Internet search, and then the snowball method was used, involving interviewees suggesting other possible stakeholders. Interviews were conducted until the researchers reached conceptual saturation, meaning a point where many of the same topics and ideas reappeared in the data.[20] Interviews stopped after reaching saturation, with the aim of ensuring that a comprehensive and diverse set of perspectives were obtained. Such comprehensiveness and diversity is essential for effectively understanding food systems issues within the context of the CBH nexus.

**Table 1.** ***Number of participants working at provincial, regional, and local scales***

| Scale | Participants |
|---|---|
| Provincial | 7 |
| Regional | 10 |
| Local | 16 |

An interview script (Appendix 1) was developed and sent to participants before the interview. The interviews began with the researchers providing brief descriptions of the project, the interview process, and the main topics covered by the questions. The interviews were conducted by Zoom, and each interview ran for approximately 45 minutes to 1 hour. The confidentiality of interviewees' identities are maintained, and their names are not included in reports, unless they request otherwise.

Qualitative data analysis is used to analyze interview data, and in the case of this research, the study analyzed and interpreted the data subjectively (i.e., through the participants' understandings, perspectives, and viewpoints).[21] This research develops the CBH framework and maps CBH-food systems relationships (Figure 3) based on the data. No theory is tested, instead the theory, knowledge, and a comprehensive picture of co-benefits and trade-offs of CBH objectives and food systems are developed through the data analysis. The data were analyzed using an inductive coding approach using NVivo, meaning codes, or themes, are identified as the interviews transcripts were reviewed.

The analysis involved three steps:

1. Reviewing data to ‘tag’ data with codes or themes,
2. reviewing data again to refine the coding framework, that is, the list of themes, and
3. arranging the coded data as per the components of and relationships among the CBH nexus and food.

## 5. Systems Thinking

Interviewing people involved with different aspects of the CBH-food system resulted in diverse perspectives on the local and regional sustainability challenges and opportunities experienced in Comox valley. The complex relationships among these challenges and opportunities were examined using a “systems thinking” approach. Systems thinking enables explorations of the characteristics and components of a system, as well as how the nature of relationships among the different systems components influence their interactions and outcomes. In the case of this research, system thinking is applied to understand how the food system of the Comox Valley interacts with climate change, biodiversity, and health factors, issues, and objectives.

Figure 4 captures and visualizes the data from an interview in the form of a systems map. The systems map illustrates relationships among “food systems components”, that is, factors, forces, actors/organizations, programs etc. that play key roles in the food system of Comox Valley. Some of the key components featured in the systems map include local food producers, access to healthy food, regenerative practices, training and support programs, and vulnerable groups. As seen through the map, local food producers would be empowered through the support of community organizations, networks, and regenerative practices, and this would subsequently contribute to increases in local food production and aggregation.

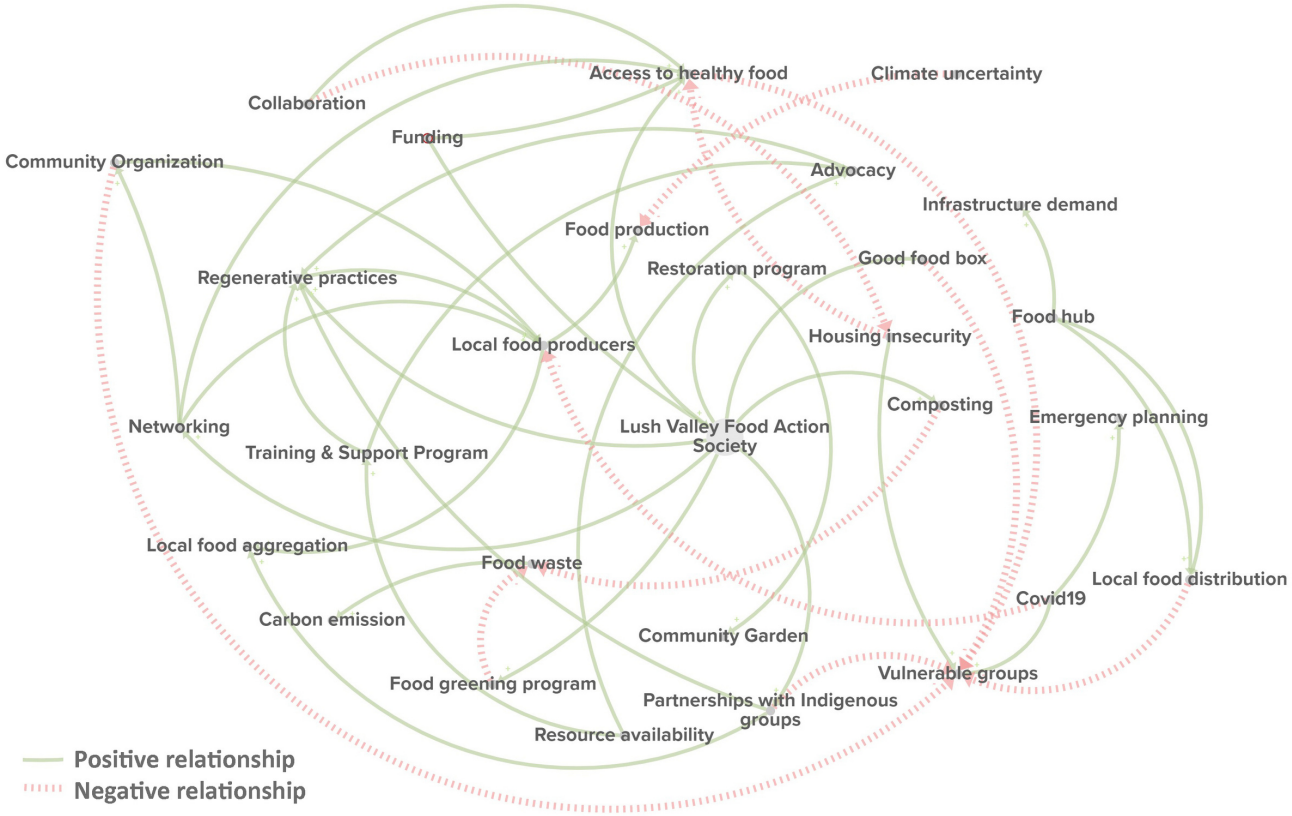


**Figure 4.** ***A sample systems map created based on the information provided by the stakeholder***

Improving access to healthy food was a key objective identified in the interview, and it was noted that increases in food prices have created challenges for this objective. As illustrated in the systems map, a system component that contributes to food access issues is housing insecurity, whereas factors that would improve access include increased collaboration and networking among food system stakeholders and organizations, as well as increased program funding. With respect to the latter, initiatives such as Lush Valley Food Action Society's good food program has improved access to healthy foods among vulnerable groups. The interview data also indicated that a food hub would support local food distribution; however, such an initiative would require investing in building infrastructure

Systems maps such as the one featured in this report identify and create a picture of the critical components that can influence a system based on stakeholder/expert knowledge and perspectives. The map displayed here captures aspects of the food system in the Comox Valley, and identifies relationships among a variety of factors, including issues and challenges such as food waste, housing insecurity, climate uncertainty, and the COVID-19 pandemic. Next steps for the project include building a collection of systems maps through an analysis of the other interview data collected in Phase 1 of this project.

## 6. Insights and Outcomes

Below is a summary of initial insights from a preliminary data analysis. The data will continue to be analyzed to develop greater understanding of the CBH nexus and how it applies to food systems, and reports on the full analysis are forthcoming. The findings are arranged into three categories: (1) planning and management, (2) food systems challenges, and (3) food systems and CBH objectives.

### *6.1. Planning and Management*

A considerable number of plans related to CBH and food objectives have been developed and implemented in the Comox Valley, such as the Comox Valley Agricultural Plan, the Comox Valley Sustainability Strategy, and the Rural Comox Valley Official Community Plan; however, challenges exist related to strategic coordination. Such challenges can be seen occurring vertically and horizontally. With respect to vertical coordination, local and provincial governments and institutions share common goals among CBH and food security, but there are differences in the prioritization of actions, as well as inconsistencies in estimated and allocated funds for achieving these goals. With respect to horizontal coordination, most interviews noted that networks among local, regional, and provincial organizations and actors need to be strengthened to better coordinate planning and strategy and policy implementation. For example, Strong relationships between poverty, lack of affordable housing, food security, and CBH objectives (particularly health) exist; however, collaboration and networks among CBH, housing, and poverty actors are not well formed.

Collaboration among the actors of the CBH and food systems is critical for integrated strategies that serve to achieve sustainability objectives. The establishment of a facilitatory body or organization that specifically links all actors within these systems and planning domains would help make progress toward local and regional sustainability objectives. However, it was also noted that to make this collaborative decision-making possible, there needs to be focus on not just improving outcomes, but also the planning process. For instance, training is needed on how to incorporate considerations around equity, diversity, reduced bias, etc. in planning to effectively facilitate collaboration.

A lack of financial resources was a commonly noted challenge and limitation; it was mentioned by almost all the interviewees as a barrier to achieving their goals. In addition, it was identified that the nature and extent of capacities and limitations are not commonly understood among different actors and stakeholders. For instance, provincial governments are constrained by rules and their own resource limitations in how much they can finance local organizations. Organizational capacity can be improved through collaboration, but it was noted that this was not currently being done effectively. For example, despite all the

important work local NGOs perform, many pursue their goal individually and separately, with limited collaboration, and thus are not using the capacities and resources of other actors effectively. Networks and collaborative actions among related NGOs need to be improved.

### *6.2. Food Systems Challenges*

A diversity in farm production can be seen in Comox Valley; however, food production systems experience significant challenges in the Comox Valley. A dramatic increase in property prices in recent years (e.g., approximately a 30% increase from 2020 to 2021/2022), and this creates financial strain on both residents and farmers. Coupling this with the costs of maintaining farms and their structures (such as greenhouses) in the face of climate change and other environmental hazards, producers are finding farming increasingly less financially viable, creating risks of reductions or halts in local agricultural operations and activities. It was also identified that the percentage of Indigenous farmers is decreasing in the region, and their experiences and practices have not been documented and thus are at risk of being lost.

Financial challenges experienced on-farm translate to local distribution and access issues, as higher costs of local farm products reduce their competitiveness to imported products. Local food production subsidization policies have been implemented to address this issue, and some food local business empowerment actions have been also done. The Food Share program, Different Good Food Box programs implemented by Lush Valley are examples of these actions. However, local foods are still not competitive to global, imported products, and more is needed to encourage and enhance local food flows and producer-consumer supply chains.

The lack of stakeholder-actor networks and collaboration discussed above presents challenges for food production systems. Comox Valley farmers work individually, with little networking and knowledge exchange. Some of them have exceptional experience and skills (for example, on how to implement on-farm climate action strategies), but these skills/knowledge are not being effectively spread throughout the region. In addition, there are no strong and effective links between farmers and policymakers, making it difficult for farmers to effectively address issues such finding markets for their products or problems with water shortages. Such issues could be (in part) addressed by providing farmers with more authority and control over their operations and role within local and regional food systems.

Beyond the production aspects of the food system, participants noted that a considerable number of people in the Comox Valley experience food insecurity, and the COVID-19 pandemic has highlighted and exacerbated this issue. Food banks and charitable food

systems play significant roles in addressing local/regional food insecurity; however, these groups experience their own challenges. For example, some products that have not been sold before their best-before dates are donated to food banks, which although works well for reducing food waste, it potentially exposes people to products that may be “past their prime”. Such an issue highlights challenges in managing and balancing food security, food waste, and local health objectives.

### *6.3. Food Systems and CBH Objectives*

The climate action strategies in the Comox Valley include those aimed at reducing farmland-related GHG emissions, as well as reducing methane produced through food waste. Although trade-offs are involved, food waste is decreased through the strategy discussed above of donating foods with best-before dates being near or passed. Other GHG-reducing strategies include those that encourage organic food production.

Climate adaptation considerations also appeared in the discussion, such as those related to water protection, both quantity and quality. Water availability and accessibility are determinative factors in food production, food price, and capacity to adapt to climate change. Food production depends on reliable access to freshwater sources, and the implementation of water taxes can increase food production prices. Policies have been made to manage water use in agriculture, which is important for climate adaptation, and providing rainwater management services can help farmers to access more water. Additionally, healthy freshwater systems are essential for both agriculture and the survival of wildlife species, positioning water and watershed protection strategies at the intersection between agricultural productivity, climate adaptation, and biodiversity conservation.

In addition to co-benefit strategies, participants identified trade-offs between agriculture and CBH objectives. For example, policies that allow farmers to use pesticides can negatively impact soil ecosystems (i.e., biodiversity) and affect the healthiness of food products due to trace pesticides on foods (i.e., health). As another example, allowing farmers to grow chicken, pigs, and cows in their backyards may be beneficial for local economic objectives, while providing an opportunity for locals to access organic meat; however, it holds trade-offs with biodiversity since wild species such as bears are attracted to food sources in backyards, leading to human-wildlife conflicts and potential killing of habituated animals.

Further discussion around the health aspects CBH nexus included public awareness (or lack thereof). It was noted that people lack awareness about the health benefits of local organic foods in comparison to globally-imported foods. Ultimately, preferences go toward buying cheaper foods, which negatively impacts both local health and food markets. Such

inclinations toward cheaper, unhealthier products increase during times of economic stress; for instance, it was noted that the COVID-19 highlighted and exacerbated food insecurity in the Comox Valley region. COVID-19 further exacerbated food-health issues, as it refocused health authorities and organizations to prioritize virus-related considerations through a narrow lens, which consequently detracted these groups from other essential health considerations.

## 7. Next Steps

This research explores co-benefits and trade-offs among climate action, biodiversity conservation, and human health, as applied to food systems strategies and objectives. The purpose of this work is to improve processes for and approaches to integrated planning, that is, planning that comprehensively recognizes interactions among a range of sustainability objectives. Phase 1 of the research involved interviewing stakeholders and government actors in the Comox Valley, and initial insights and outcomes from this work are presented here.

The next steps in the research are to conduct a more extensive analysis to better understand all the linkages within the CBH nexus and how they apply to food systems. The results of this work will be an analytical framework that can be used to examine different food systems strategies through a systems perspective, which reveals alignments and tensions among strategies and sustainability objectives. The interviewees (and others) will be invited to workshops to explore the framework and engage in systems explorations of different food strategy scenarios. Following the workshops, the framework will be finalized, and then applied to the plans and strategies produced by the local and regional governments in Comox Valley. The results of this analysis will reveal co-benefits and trade-offs that are captured in these plans and where gaps and blindspots exist. Such information could be used to improve integrated planning in the Comox Valley.

Outcomes of this research will be captured and communicated through engagement tools, such as interactive systems models. These tools will clearly reveal co-benefits and trade-offs of food systems strategies in a clear and publicly-comprehensible way, and they will be made available through public websites. The ultimate aim of developing such tools is to engage stakeholders and the broader public in local/regional food systems issues and possibilities, as well as support the formation for stronger network and collaboration between stakeholders working within food systems and the CBH nexus areas.

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## Appendices

### *Appendix 1: Interview Protocol*

Institutions: _____
Interviewee (Title and Name): _____
Interviewer: _____
Participant ID (check database for name and affiliation):_____
Date: _____
Interview length: _____

**PART 1. ABOUT YOUR ORGANIZATION/INITIATIVE**

1.1 What is the main purpose and mission of your organization?
1.2 How would you describe your current job position and duties?
1.3 Does your community primarily operate on a local or regional scale (or both)?

**PART 2. SUSTAINABILITY GOALS (adapt to the specific interviewee)**

2.1 What (if any) are your organization's major objectives and targets regarding climate action, biodiversity, and/or health?
2.2 Are any of these objectives considered as interlinked goals, or are they considered separately (e.g., separate indicators, different departments, different plans, etc.)?
2.3 Are any of these targets/objectives related to local or regional objectives for food systems (and how)?

**PART 3. STRATEGIES, CO-BENEFITS, AND CHALLENGES**

3.1 What strategies does your organization currently implement toward climate action, biodiversity conservation, or community health?
3.2 Are these strategies helpful for other organizations or institutions to achieve their goals, and how?
3.3 What challenges and barriers do (or could occur) with these strategies?
3.4 What unintended consequences do (or could occur) with these strategies?
3.5 What factors, resources, or supports, collaborations are needed for the success of these strategies?

**PART 4. PARTNERSHIPS AND COLLABORATIONS**

4.1 What partnerships (if any) are involved in these strategies?
4.2 Which strategies of other organizations (if any) are beneficial to your work and goals in terms of CBH/food systems?

4.3 Are there other strategies and community objectives (if any) that conflict or present challenges for your organization's goals about CBH or food systems?
4.4 Are there any internal documents about these subjects (co-benefits and trade-offs of the strategies of your organization or the others)?

**PART 5. SCALE**

5.1 What CBH/food-related effects do your strategies have on Comox Valley?
5.2 What CBH/food-related effects do your strategies have on Vancouver Island and/or B.C.?
5.3 Are there differences (or conflicts) in CBH/food strategies and objectives among the local, regional, and/or provincial levels?

**PART 6. FUTURE STRATEGIES**

6.1 Can you think of any changes or new strategies do you think are necessary for your organization to implement to address the concerns discussed above? Are there plans to implement these strategies?
6.2 What are the co-benefits of the future/proposed strategies?
6.3 What are the trade-offs of the future/proposed strategies?
6.4 What partnerships are necessary to support the future/proposed strategies?

- Is there any other thing you want to add?
- Is there anyone else that we should contact?

## *Appendix 2: Consent Letter*

Food and Agriculture Institute
University of the Fraser Valley
33844 King Road
Abbotsford, BC V2S 7M8

**Date**

***The Climate-Biodiversity-Health Nexus***
**Letter of Consent for Interview Participants**

**Purpose/Objectives of the Study**
My name is Dr. Robert Newell, Associate Director of the Food and Agriculture Institute at the University of the Fraser Valley, and I would like to invite you to participate in a research project titled, The Climate-Biodiversity-Health Nexus. I am an Associate Director of the Food and Agriculture Institute at the University of the Fraser Valley, and I am conducting this project with the Co-Investigator, Dr. Lenore Newman (Director, Food and Agriculture Institute) and our research assistants, Evan Bowness, Colin Dring, Charmaine White, Mohaddese Ghadiri, and Jofri Issac. The project also involves a group of collaborators Ann Dale (Royal Roads University), Leslie King (Royal Roads University), Runa Das (Royal Roads University), Jade Yehia (Island Health), and Tamara Krawchenko (University of Victoria).

The purpose of this project is to work with communities to create a framework for designing strategies and policies that maximize benefits for human well-being and the environment, and then applying this framework to local food systems planning. The framework will consist of three strategic areas that are critical to sustainable development: 1) climate action; 2) biodiversity conservation; and 3) community health, and we are referring to it as the climate-biodiversity-health (CBH) nexus. Applying the CBH nexus to different community planning areas (in this case, food systems) may show how certain strategies, policies, and actions align or conflict with imperatives for sustainable development.

**Procedures Involved in the Research**
This project is being conducted in the Comox Valley Regional District, and the research methods consist of a series of interviews and workshops. The interviews will be semi-structured, and they will be conducted by telephone or online using video conference software (i.e., Zoom). Participants will be provided with information on the background and

context of the project, and then they will be asked a series of questions. The interview questions are designed to identify local concerns and issues related to climate change, biodiversity, and community health, and the successes, benefits, challenges, and barriers associated with plans and strategies for addressing these issues. Interview data will be analyzed to identify climate-biodiversity-health relationships, and the relationships will be mapped to develop the CBH nexus framework.

**Potential Benefits**

The project will benefit participants by developing tools that can be used to support food systems planning and policy in their community and region. The CBH systems map will be developed and refined using feedback from community participants; thus, the results of the research will be directly applicable to their local food systems planning challenges and (broadly) their efforts toward sustainable development. The systems map (and relevant reports) will be made publicly available, which will enhance public understanding of the social, economic, and environmental implications of developing local food systems in certain ways. In addition, the research will produce tools for integrated planning (i.e., the CBH framework and systems maps), which can be used by those working in the field of local and regional planning. A user guide will be created so that local governments and practitioners can adapt them to their planning needs.

The project will also benefit the research community by contributing to the state of knowledge on how to effectively engage in integrated food systems planning, and it will produce valuable theoretical and practical insights on a new integrated planning framework (i.e., the climate-biodiversity-health, or CBH, nexus). It will also produce knowledge on how to create tools (i.e., the CBH framework and models) that can effectively capture, examine, and communicate complex information on the co-benefits and trade-offs associated with certain community strategies and policies.

**Potential Harms, Risks or Discomforts to Participants**

There are no anticipated risks. The engagement will be conducted online, and the interviews, workshops, and survey questions will not solicit confidential or sensitive information.

**Confidentiality**

Only researchers and collaborators will have access to the raw data (i.e., interview and workshop transcripts), and data will be stored and secured using the Canada-based Nextcloud secure file storage system. The interview data will be deleted from file storage and the researchers' computers by March 31st, 2024.

**Participation**
Your participation is completely voluntary, and you free to refuse to answer any workshop questions. In addition, if you choose to participate, you are free to withdraw, and your interview comments will be subsequently removed from the dataset. The exception to this is when the results of the results of the interviews are summarized in a report and PowerPoint presentation that will be presented at the beginning of the first workshop. In the event that you would like to withdraw, please indicate your desire to withdraw prior to November 2021.

**Study Results**
The research will be disseminated through academic journal articles, reports that are first distributed to participants for review and then (one month later) are made publicly available from a project website, and through oral presentations such as academic conferences and other venues (e.g., guest presentations, webinars, etc.).

**Questions and Concerns**
If you have questions regarding the project, you can contact myself (Dr. Robert Newell) at Robert.Newell@ufv.ca or 604-504-7441 ext. 4538. If you have any concerns regarding your rights or welfare as a participant in this research study, please contact the Ethics Officer at 604-557-4011 or Research.Ethics@ufv.ca. The ethics of this research project have been reviewed and approved by the UFV Human Research Ethics Board **[insert HREB protocol# and date of full approval as noted on certificate]**.

**Signature**
By signing below, I agree to participate in this study, titled *The Climate-Biodiversity-Health Nexus*. I have read the information presented in the letter of informed consent for the study being conducted by at the University of the Fraser Valley. I have had the opportunity to ask questions about my involvement in this study and to receive any additional details. I understand that I have the right to withdraw from the study at any time and that confidentiality and/or anonymity of all results will be preserved.

☐ Please check this box to indicate that you consent to having the interview audio-recorded. The researchers will ask participants if they consent to audio-recording at the beginning of interviews. If you not wish to have the session recorded, you are still welcome to participate, and the researchers will take detailed notes instead of a recording.

Name (please print)
Signature
Date
Once signed, you will receive a copy of this consent form.