

Okanagan Bioregion Food Systems Design Project

Institute for Sustainable Food Systems



Okanagan Bioregion Food System Stakeholder Feedback Summary

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Abstract

The success of bioregional food system research requires engagement with a variety of stakeholders. For this project, stakeholder outreach primarily aimed to, introduce the project, build support for the research in the bioregion, and collect feedback on preliminary food system objectives and indicators. In total, ISFS collected feedback from 65 stakeholders representing all three regional districts in the bioregion. Based on all the collected feedback, we understand that land use and the associated implications around affordability, access, and environmental impacts is of significant concern. Environmental considerations related to water, salmon habitat and climate change were often the focus of discussion. We discovered there is consistency in priorities across regional districts, which suggests there could be opportunities to work together in pursuit of shared food system goals within the bioregion.

Okanagan Bioregion Food System Design Project

The Okanagan Bioregion Food System Design Project is a two year, multi-disciplinary research project initiated by the Institute for Sustainable Food Systems (ISFS) and with regional partners to provide regionally specific, data-driven information about:

- The potential to increase food production and processing for local markets in the Okanagan bioregion;
- Whether, and to what extent increasing local food production could improve food self-reliance, benefit the economy, and create jobs;
- The potential to reduce some detrimental environmental impacts from food production in the Okanagan bioregion;
- The current policy gaps that hinder such a food system, and proposed policy changes to address these gaps.

The Institute for Sustainable Food Systems

The Institute for Sustainable Food Systems (ISFS) is an applied research and extension unit at Kwantlen Polytechnic University that investigates and supports regional food systems as key elements of sustainable communities.

More information: www.kpu.ca/isfs

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1. Project Background

The Okanagan Bioregion Food System Design Project (OBFSDP) is a two-year, multi-disciplinary research project initiated by the Institute for Sustainable Food Systems (ISFS) at Kwantlen Polytechnic University (KPU). The project will model the current Okanagan bioregional food system (baseline), and a number of future food system scenarios. The scenarios represent possible outcomes of choices we make, and evaluate a range of food production, ecological, and economic indicators including: food self-reliance and food imports, greenhouse gas emissions, nutrient balance, wildlife habitat impacts, employment, GDP, tax revenue, etc. When compared to the baseline, these outcomes can be used to help understand the impacts of decisions we might make, and how they impact the outcomes we could seek to achieve. The project then will outline the necessary policy changes to achieve these outcomes. The objective of the study is to bring forth data driven information about:

- the potential to increase food production for local markets;
- the potential for improvements to food self-reliance, and the local economy;
- the potential to reduce negative environmental impacts of the food system;
- the needs and opportunities of the post-production and processing sectors;
- the social capital potentials, and;
- the policy gaps that hinder such a food system, and proposed policy changes.

The project is the second study of its kind. In 2016, the Institute for Sustainable Food Systems completed a precedent study of the Southwest BC bioregion food system, which included development of a computational model to assess and optimize food self-reliance, and a number of other outcomes.

1.1. What is a Bioregion?

Bioregions are areas that share distinct human and ecological character, reflecting the fundamental importance of ecosystems in supporting social and

economic activity within a region. We believe that bioregions are an appropriate and replicable scale to analyze the dynamics of, and plan for, food systems that fit within the environmental capacities of place; which is critical to our sustainable future.

Determining BC bioregions involves using a map layering approach to outline the anthropogenic and ecological attributes of regions in BC. Using this method, the Okanagan Bioregion was determined to be the area consistent with the Okanagan-Similkameen, Central Okanagan, and North Okanagan Regional Districts. Delineating the Okanagan Bioregion was the first step in the Okanagan Bioregion Food System Design Project (see [Okanagan Bioregion Delineation Research Brief](#)).

Outreach within the Okanagan bioregion for the OBFSDP began in 2017, and has included delegations to elected officials, presentations to community groups, and work with academic partners at UBC-Okanagan, and Okanagan College. The outreach described in this report was focused on collecting feedback from a number of stakeholders in the bioregion about their understanding of food system context and challenges in the bioregion.

1.2. Purpose of Stakeholder Outreach

The success of bioregional food system research requires engagement with a variety of stakeholders. The stakeholder outreach in the Okanagan bioregion aimed to:

- Connect with stakeholders, introduce the project, and build support for the research;
- Collect feedback on the preliminary list of food system objectives and indicators;
- Understand what additional indicators might be of interest to stakeholders, and;
- Gather information to guide the development of the future food system scenarios that will shape this research

1.3. Preliminary Food System Objectives and Indicators

For the purpose of these workshops the research team developed a preliminary list of Okanagan bioregion food system objectives and indicators for participants to reflect on and give feedback. These lists were developed based on previous work, preliminary research, and engagement with the OBFSDP Advisory Committee (for Advisory Committee membership list see [Appendix A](#)).

Food System Objectives: represent high level goals for the food system. They articulate a specific desired action, for example: to protect, reduce, improve or support a food system characteristic. Establishing a clear set of objectives is a critical step in the analysis of bioregional food systems.

Food System Indicators: are distinct from high level goals articulated in the objectives list. The indicators articulate the specific metrics used to measure progress towards the objectives.

See [Appendix B](#) for the list of food system objectives and indicators.

2. Methods

Okanagan bioregion stakeholder feedback was collected using three methods; in person stakeholder workshops, an online form, and a Certified Organic Associations of BC (COABC) conference session. These methods allowed the research team to reach stakeholders representing different sectors from across the bioregion.

2.1. Stakeholder Workshops

In order to collect feedback from a broad cross section of stakeholders in the Okanagan bioregion, the research team planned and executed three workshops in the bioregion in January, 2019. The workshops were held in each of the three Okanagan regional districts; North Okanagan, Central

Okanagan, and Okanagan-Similkameen. In total 48 stakeholders attended the three workshops and represented a broad range of interests within the Okanagan bioregion.

During the workshops, facilitators engaged participants in various activities designed to gather feedback. These included presentations of background information, completion of individual worksheets, small group discussions, and a group prioritization exercise. These key tools and techniques provided the research team with a wealth of stakeholder feedback critical for shaping the nature of the research project, development of scenarios and creation of knowledge mobilization tools.

Each workshop opened with a 30-minute introduction to the project, and reporting on research done to date, including Okanagan bioregion delineation, drafting preliminary objectives and indicators, preliminary baseline food system modeling, and data collection to date. This section of the presentation was followed by an overview of the preliminary objectives and indicators.

Individual Worksheets: The next phase of the workshop aimed to collect individual feedback from participants regarding their bioregional food system



Figure 1: Workshop participants in Okanagan-Similkameen (Penticton) during the introductory presentation

priorities. Each participant received a worksheet (see [Appendix B](#)) to complete individually, with a list of the preliminary objectives and indicators. They were instructed to provide a ranking (high, medium or low) for each objective and indicator, based on their own perception of importance. They were also asked to write down anything that may have been missed on the preliminary lists.

Small Group Discussions: Following completion of the individual worksheet, participants were divided into small groups to engage in a facilitated discussion about the preliminary objectives and indicators, and perceived relevance per the Okanagan bioregion context. These discussions lasted 30 minutes and were facilitated by a member of the research team. Notes of these discussions were taken on flip charts. Participants were asked to freely respond to the following questions, based on their review of the preliminary objectives and indicators:

- What was most important to you?
- What was less important?
- What did we miss?

Group Prioritization: After the small group discussions concluded, workshop facilitators reviewed notes from each discussion and compiled a list of new indicators that reflected the nature of the discussions. This list included all the indicators



Figure 2: Participants in the Central Okanagan taking part in the group prioritization exercise.

brainstormed - the research team did not take into account if data and resources were available to measure these new indicators at this time. This new list of indicators was then posted next to the existing preliminary indicators. Each participant was given three red sticky dots and were instructed to “vote” for the preliminary objectives they most prioritized with these dots. They were also given five blue dots, and instructed to use these to “vote” for their highest priority indicators – they considered both the preliminary list and new indicators when voting. For each, dots could be assigned in any way the participant choose, for example they could place all dots in one place, or distribute them across multiple objectives/indicators.

2.2. Online Form

The research team created an online prioritization form using Google forms that was made available to participants who were unable to attend in person workshops. In addition, the form was also sent out more broadly to stakeholders in the bioregion to share with their contacts. Eight responses were collected via the online form.

2.3. COABC Conference Session

The Certified Organics Association of BC (COABC) annual conference was held in Vernon, BC (in Regional District of North Okanagan) from February 22-24, 2019. The research team presented the OBFSDP in a conference session on February 23rd. After a brief introductory presentation on the project, delegates completed the objectives and indicators prioritization worksheet used in the January stakeholder workshops. This was followed by a general discussion of the preliminary objectives and indicators with notes recorded on a flip chart.

Participants attended the conference session based on their own personal interest in the subject. Eight of the 19 participants were from outside the bioregion and although they completed the worksheet and participated in discussion, we did not consider their responses when analyzing the worksheets for the purpose of this summary.

2.4. Data Analysis

Through stakeholder workshops, the online form, and the COABC conference session, the research team collected feedback on the preliminary objectives and indicators from 65 respondents. This data was analyzed for each of the outreach formats, and then compiled to get a broad sense of the food system priorities across the bioregion.

The worksheets completed by individual participants in person, at the workshops or COABC conference, or online, were analyzed by assigning a numerical score to rankings; High=2, Medium=1 and Low=0. The scores from each worksheet were tallied for each objective and indicator.

3. Stakeholder Feedback Summary Results

3.1. Participant Overview

A diversity of stakeholders provided feedback through various forums for the OBFSDP. In total, the research team collected 65 food system objectives and indicators worksheets from respondents

STAKEHOLDER REPRESENTATION FROM EACH REGIONAL DISTRICT IN THE OKANAGAN BIOREGION

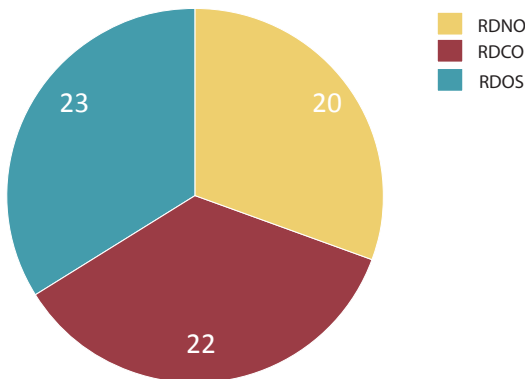


Figure 3: Number of respondents from North Okanagan (RDNO), Central Okanagan (RDCO) and Okanagan-Similkameen (RDOS).

STAKEHOLDER REPRESENTATION FROM DIFFERENT SECTORS

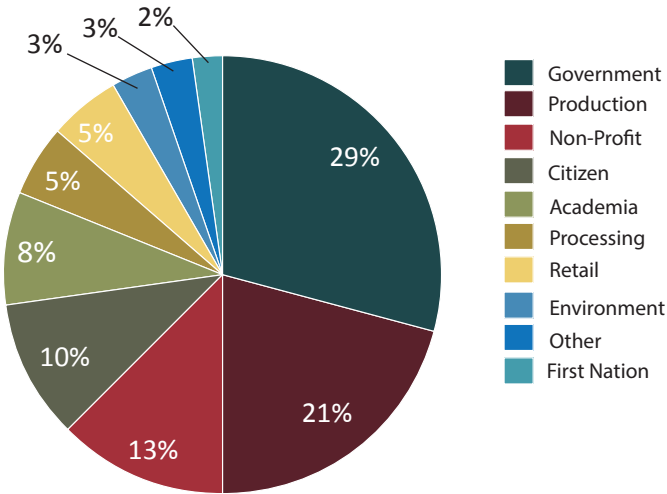


Figure 4: Representation of respondents from food system sectors. Note: some respondents identified with more than one food system sector.

representing all three regional districts in the Okanagan bioregion. The proportion of respondents from each of three regional districts who provided feedback was nearly equal (Figure 3).

These respondents providing feedback represented a range of sectors and interests in the food system (Figure 4). Please note that some respondents identified with more than one food system sector.

3.2. Prioritizing Food System Objectives

Many participants reflected on the prioritization worksheet exercise, giving feedback that ranking objectives was difficult because they felt that all the preliminary objectives presented should be assigned a high priority. It was also clear from participant discussion that they saw the presented food system objectives as highly interconnected. It was common for participants to make connections between objectives, e.g. protecting agricultural land, and enhancing ecological integrity are critical steps for increasing food self-reliance. There were no objectives in the preliminary list presented that participants felt did not fit with the goals and values of a regionalized food system in the Okanagan.

Figure 5 shows the ranking for the preliminary food system objectives based on feedback from Okanagan stakeholders. The most highly ranked objectives were:

1. Preserve agriculture land for food production
2. Water use for agriculture does not negatively impact ecological integrity
3. Reduce the negative environmental impacts of the food system
4. Increase the local economic impact of the food system
5. Increase food-self reliance

The permanent loss of agriculture land to residential development, industrial uses etc., is a significant concern for Okanagan stakeholders, which is demonstrated by the high ranking of the objective *preserve agricultural land for food production*. Many participants also noted issues related to the loss of food production potential when agriculture land is used for wine grape production, and other non-food agriculture. This may become particularly

important with the expected proliferation of non-food agricultural crop production sectors, such as the cannabis industry. Participants were also interested in better understanding the link between the use of agriculture land for non-agriculture uses (i.e. residential uses, industrial development etc.) and the impact this might have on land speculation and increased land prices which puts farmland out of reach for many farmers. Participants made strong connections between farmland protection, food self-reliance and farm viability in the bioregion.

Water use and availability is of significant interest to stakeholders in the Okanagan bioregion, particularly, as described in the objective ranked #2, which relates to understanding the impacts of water use on ecological integrity. Additional issues such as water quality, and pollution from agricultural activities were of interest due to close connections between agriculture, and ecologically sensitive areas.

Moving towards greater environmental sustainability in the food system is seen as a desirable objective by Okanagan stakeholders. Participants noted

PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY ALL OKANAGAN BIOREGION STAKEHOLDERS SURVEYED

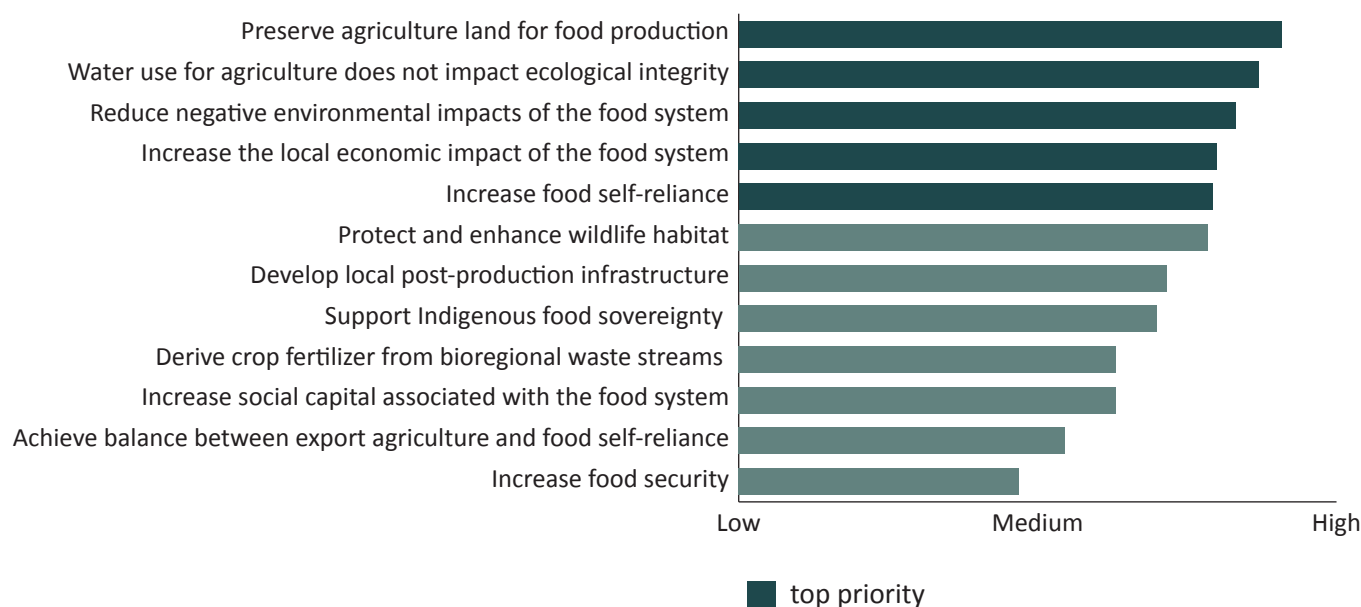


Figure 5: Ranking of preliminary food system objectives from all Okanagan stakeholders surveyed through in person workshops, online feedback, and the COABC conference. Dark green bars indicate highest ranked objectives.

the potential to mitigate negative environmental impacts on the supply side (production, post-production/processing, and distribution), as well as the demand side (consumption and waste management). Climate change, and the potential impacts that it will have on the bioregion are of concern, and participants placed high priority on reducing, and mitigating the food system contributions to increased greenhouse gas emissions and climate change.

Increasing the local economic impact of the food system was also highly prioritized by participants. Consistently discussed themes for possible economic analysis were the viability of farming, and the economic returns to farmers. Many participants indicated that increasing economic returns for farmers in all production sectors, not just those producing for local, direct markets would be a desired outcome for the Okanagan bioregion.

Food self-reliance was deemed important and ranked relatively high, but it was not a top priority. Many participants suggested that this may not be an ultimate goal for the bioregion. They recognized the priorities of protecting the agricultural land base, and the environment as being critical for food self-reliance and suggested that addressing these challenges would likely result in higher levels of regional food self-reliance, thus negating the need to rank increased food self-reliance higher.

3.3. Prioritizing Food System Indicators

Participants ranked the objectives based on how relevant and important that information would be for food systems work in the bioregion. The same High (H), Medium (M) and Low (L) system was used to rank the indicators. [Figure 6](#) shows the ranking for the preliminary food system indicators based on feedback from all Okanagan stakeholders surveyed. The highest ranked indicators were:

1. Land available for food production
2. Water use for agriculture
3. Salmon habitat
4. Amount and type of food produced
5. Food-self reliance

Stakeholders in the Okanagan were consistently interested in the *amount of agricultural land available for food production* across the bioregion. Many participants also felt that *food self-reliance* was a valuable indicator to understand the capacity of production in the bioregion, as it relates to the food need of the local population. In addition, participants ranked the indicator of *amount and type of food produced* high, expressing an interest in the overall production capacity across the bioregion. This is closely linked to food self-reliance, land use, and economic outcomes.

Water use for agriculture, and associated impacts on agriculture and ecosystems is a high priority for stakeholders in the Okanagan. Salmon have critical cultural and ecological value in the Okanagan bioregion. The indicator measuring the quality and amount of *salmon habitat* scored high in the overall indicator ranking. There is particular interest in the Indigenous food sovereignty implications of salmon in the bioregion.

Agriculture and Food Production Indicators

Stakeholders were interested in the indicators related to land and food self-reliance as a baseline for understanding the agricultural capacity of the bioregion. Many participants also noted the importance of the post production sector, and the significant policy and regulatory barriers that affect the growth of the sector. Some participants (particularly in Kelowna) wondered about the impact of urban agriculture, both in terms of potential food production, and economic contributions. Again, there was significant discussion about the impact of non-food agriculture, particularly wine grape and cannabis production, on food production, self-reliance, and farm viability in the bioregion.

Economic Indicators

The importance of the economic viability of agriculture in the bioregion was reflected in the relatively high ranking (#3 overall) of the objective to *increase the local economic impact of the food system*. In discussions of possible economic analysis, stakeholders were interested in the use of alternative economic evaluation tools (beyond the

province's Input-Output model) to demonstrate the impact of the local food sector on communities. Alternative evaluation tools could include the local multiplier for food systems, as well as those that could elucidate the local economic impact of direct marketing, and institutional procurement of local food. There were also a number of discussions about the need for increased farm viability, and increased returns for farmers. It was generally less important to stakeholders to distinguish between export and locally oriented production, but instead to focus on increased farm viability and returns for farmers and farm operations across the sector.

Environmental Indicators

Generally, stakeholders placed a high priority on the objective to *reduce the negative environmental impacts of the food system*. In discussion of possible indicators, many participants spoke about the importance of environmental integrity in the bioregion, and the connection between environmental protection, food self-reliance and long term farm viability. Climate change and the impacts it will have on food production, and water availability is a significant concern. Related to climate change, many participants suggested consideration of additional carbon sequestration

PRIORITY RANKING FOR FOOD SYSTEMS INDICATORS BY ALL OKANAGAN BIOREGION STAKEHOLDERS SURVEYED

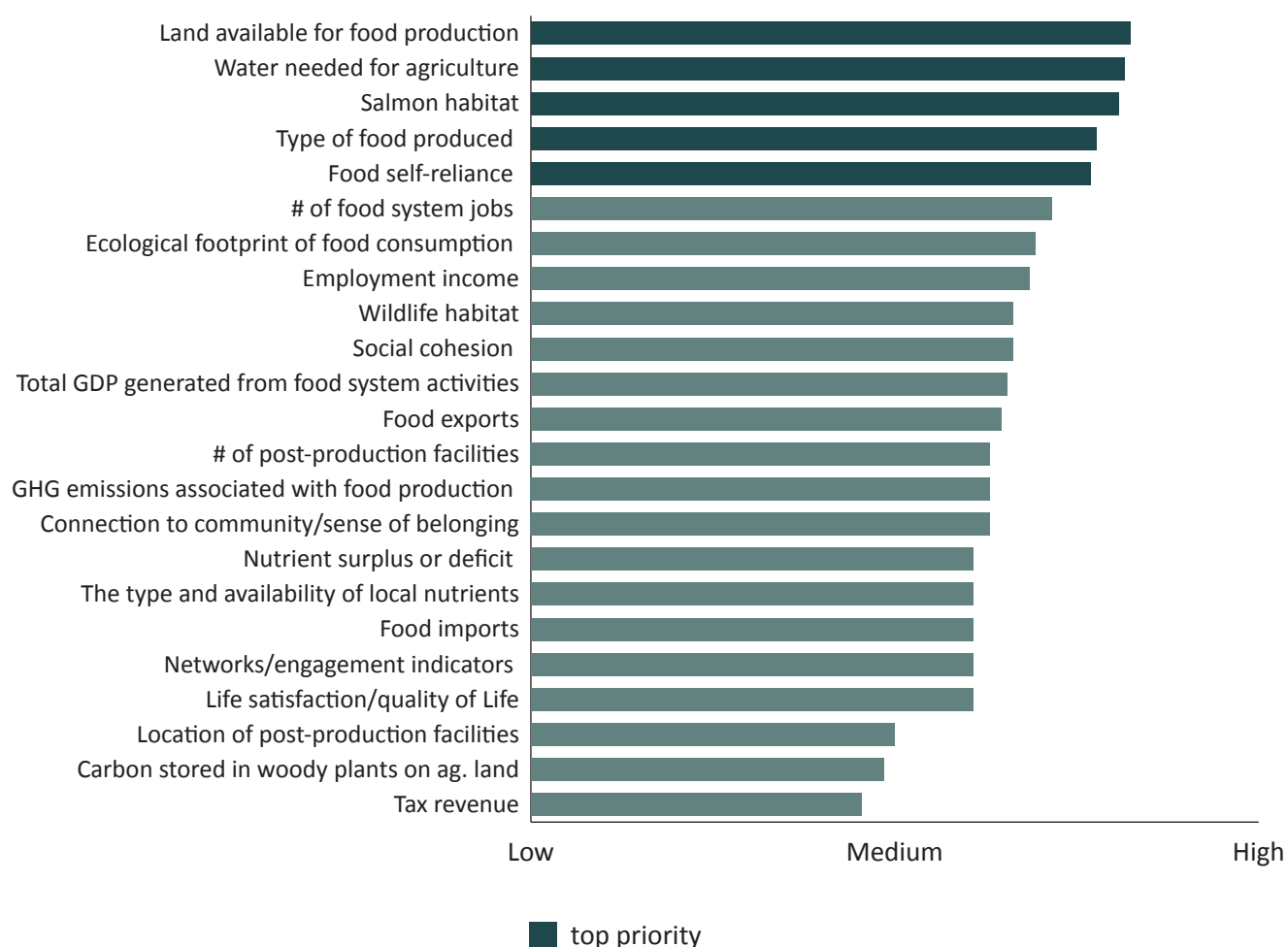


Figure 6: Ranking of preliminary food system indicators collected from all Okanagan stakeholders surveyed through in person workshops, online feedback, and the COABC conference. Dark Green bars indicate highest ranked indicators.

potential in grasslands (particularly in the North Okanagan), and soils. Water quality and availability was also mentioned as a significant environmental constraint. In addition to understanding the water needs of agriculture, participants were also interested in the regulatory dimensions of water pricing, and location of extraction.

In addition to assessment of habitat quality and connectivity, stakeholders also suggested biodiversity as a possible indicator for environmental health. Stakeholders also confirmed that salmon are a very important species in bioregion, both from environmental and Indigenous food sovereignty perspectives. Discussion at the COABC conference similarly included the importance of wildlife habitat and connectivity, the desire to see a distinction between production methods included in the study (e.g. organic versus conventional methods), and in particular the impact of agrochemicals (i.e. Glyphosate) on the environment.

Society and Culture Indicators

The indicators listed under Society and Culture we believe will be amongst the most challenging to measure. This perception, unsolicited, was shared by stakeholders who admitted to ranking some of these indicators lower because of a lack of understanding, the potential lack of data, and other barriers to measurement. Social capital was particularly challenging for stakeholders to respond to because there was no clear definition to reflect on. Some stakeholders mentioned that it could be hard to tell if social capital is attributable to the food system. It is concluded that the indicators associated with social capital will need greater clarity going forward. Stakeholders also felt that food security, as a discrete indicator, can be challenging to measure, however it was recognized that there has been work done by other groups in this area.

4. Stakeholder Workshop Results

Preserve agricultural land for food production was the highest ranked objective at the stakeholder workshops ([Figure 7](#)). This high ranking was consistent with discussions around the rapid loss of agricultural land to non-agricultural uses in the bioregion. There is also concern around the conversion of agricultural land to high value non-food production uses such as wine grape and cannabis growing. There has been little in-depth analysis in the bioregion on the impact of such industries on food production. *Water use for agriculture not negatively impacting ecological integrity* was also ranked high which was reflected in discussions at all three regional districts.

The most highly ranked indicator at the stakeholder workshops was *land available for food production*. This was followed closely by the amount and *type of food produced*, and *food self-reliance*. Through discussion many participants indicated that both the availability of, and access to land for food production was a significant concern in the bioregion. *Food self-reliance* ranked higher as an indicator than it did as an overall objective. Participants discussed the value of the measuring food self-reliance as a way of understanding potential capacity of the food system, resulting in the relatively high rank for the indicator. As an objective there was a sense that there were many contributing factors to food self-reliance, such as land availability, farm viability and environmental integrity which explains why participants assigned higher rankings to these objectives. The indicator rankings for the stakeholder workshops are shown in [Figure 8](#). For workshop results from each regional district see [Appendix C-E](#).

PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY IN PERSON WORKSHOP PARTICIPANTS

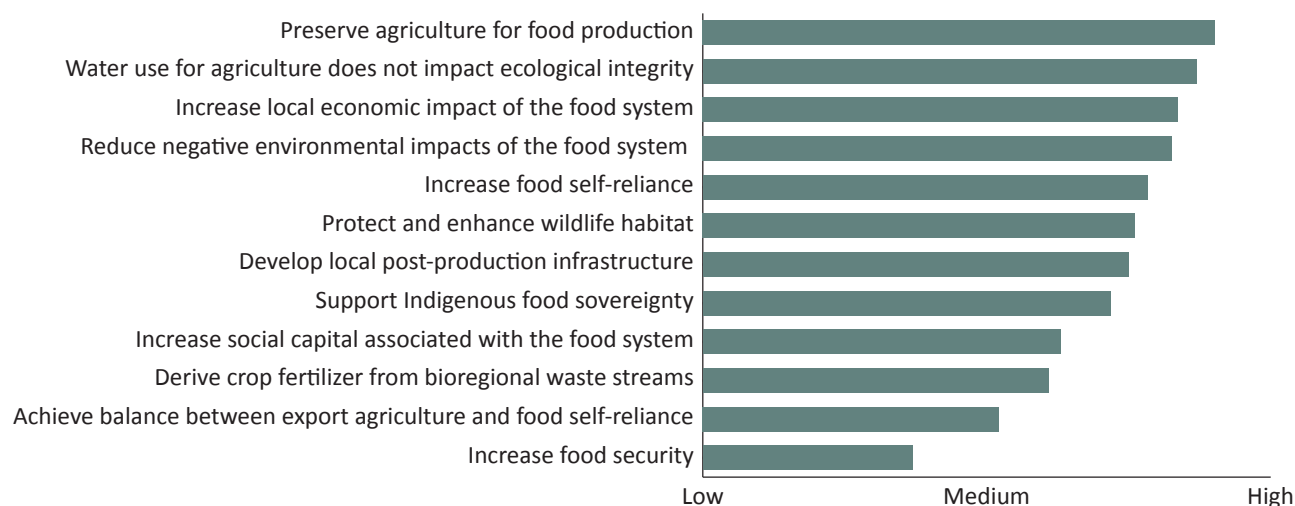


Figure 7: Ranking of preliminary food system objectives from stakeholder workshops in three regional districts.

PRIORITY RANKING FOR FOOD SYSTEMS INDICATORS BY IN PERSON WORKSHOP PARTICIPANTS

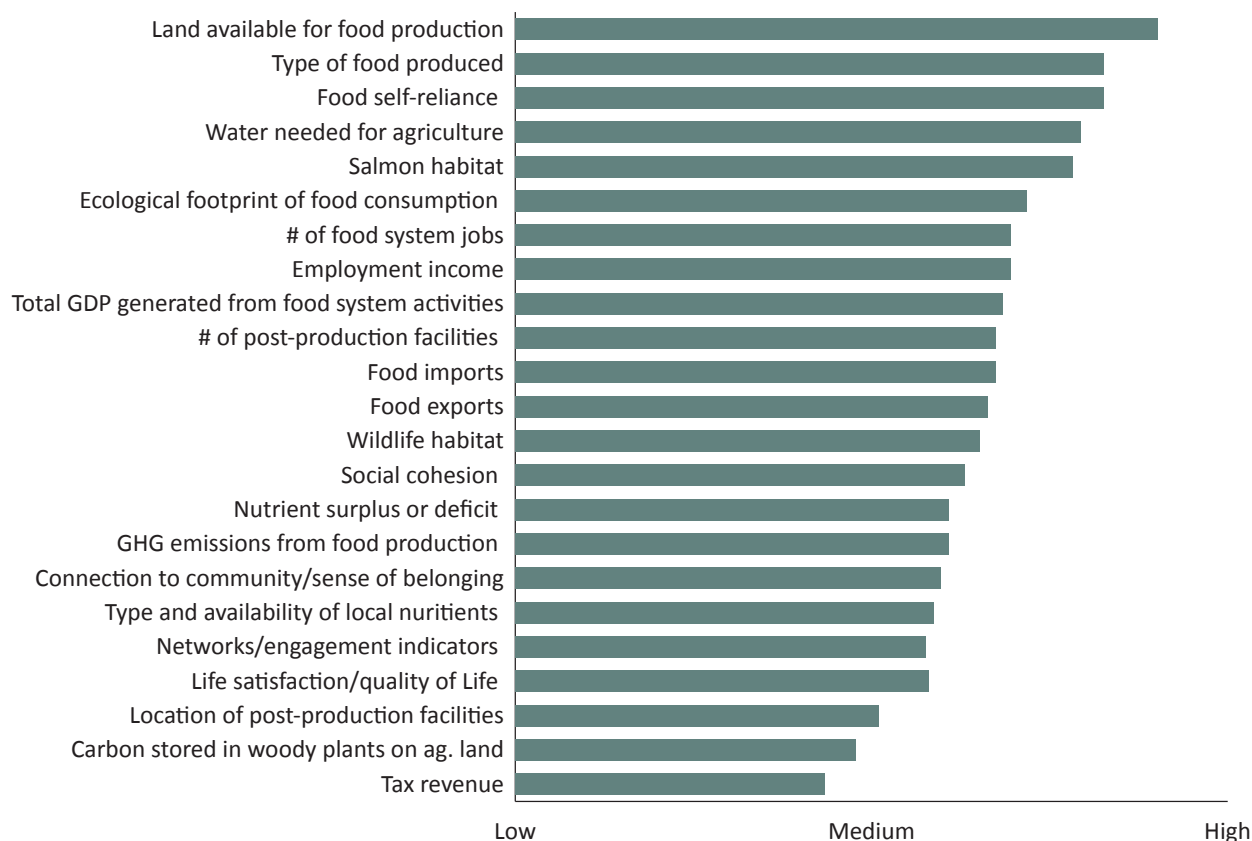


Figure 8: Ranking of preliminary food system indicators from stakeholder workshops in three regional districts.

4.1. Group Prioritization Results

At the end of each workshop participants engaged in a group prioritization exercise. This allowed participants to reflect on their own prioritization of objectives and indicators, as well as the discussions had in both the large and small group setting. Participants were given 3 red stickers each and asked to vote for the objectives, posted on chart paper, they most highly prioritized ([Table 1](#)).

Participants were given 5 blue stickers each and asked to vote for the indicators they most highly prioritized ([Table 2](#)). In addition to the preliminary list of indicators, a number of ideas for new indicators were generated at each workshop. Facilitators compiled the new list of indicators, which was added to the preliminary list before the group prioritization exercise (for priority ranking on new indicators see [Appendix F](#)). Some of the most highly ranked new

indicators added from the workshops included:

- Agricultural land prices
- Agriculture land ownership/turnover
- Production methods
- Agriculture and post production skills
- Food Waste
- Price of water
- Amount of money spent on direct marketing
- Post-production regulations
- Export locations
- Education and awareness of the food system
- % of indigenous food in diets

Available data and resources for measurement was not a consideration for indicators brainstormed at these workshops. The feasibility for inclusion of indicators will be assessed by the research team as the project moves forward.

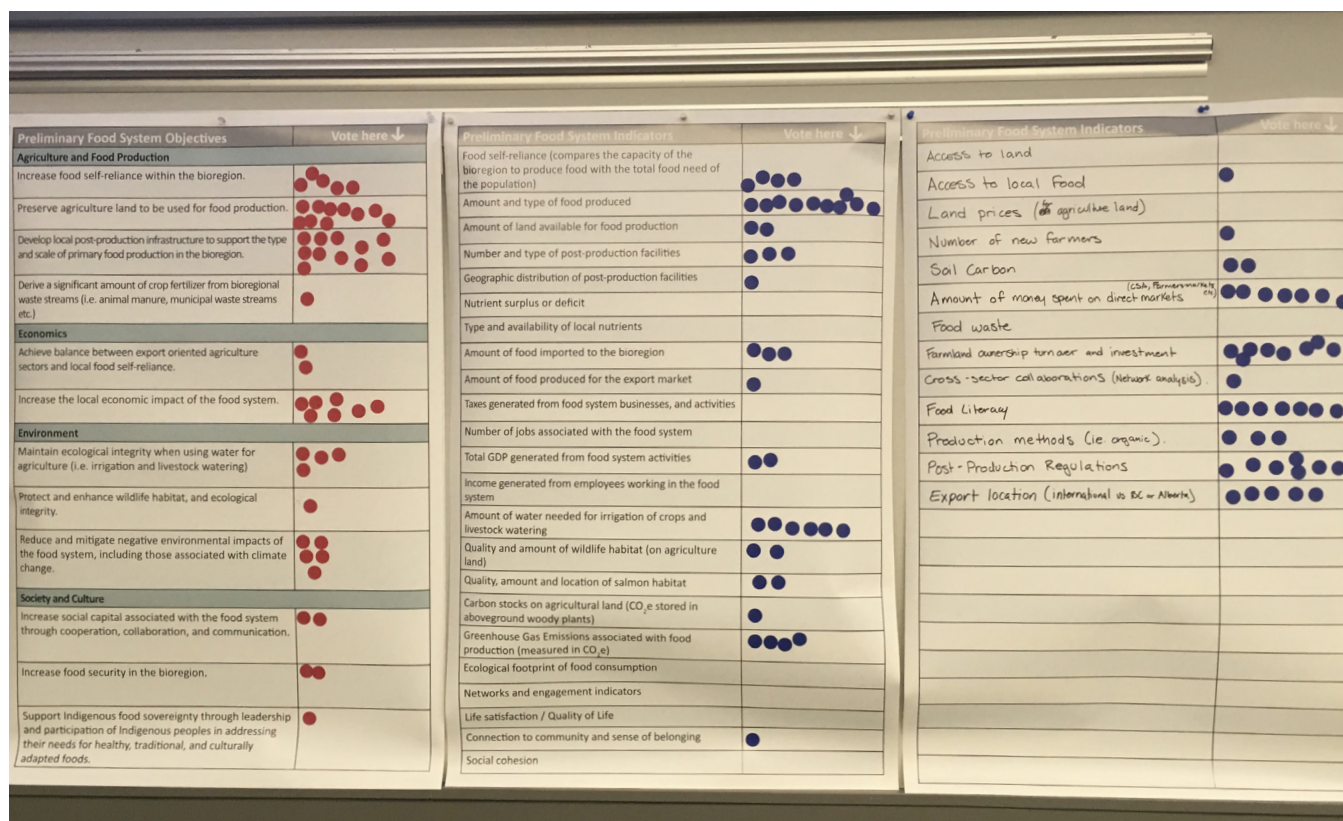


Figure 9: Posters used for group prioritization exercise. Results here from the Regional District of North Okanagan workshop in Vernon.

Table 1: Voting results from group prioritization for preliminary food system objectives

Preliminary Food System Objectives	RDNO	RDCO	RDOS	Total votes
Increase food self-reliance within the bioregion.	5	5	2	12
Preserve agriculture land to be used for food production	10	8	14	32
Develop local post-production infrastructure to support the type and scale of primary food production	11	7	5	23
Derive crop fertilizer from bioregional waste streams	1	1	1	3
Achieve balance between export agriculture sectors food self-reliance	2	0	0	2
Increase the local economic impact of the food system	7	4	5	16
Water use for agriculture does not impact ecological integrity	4	2	4	10
Protect and enhance wildlife habitat, and ecological integrity	1	1	4	6
Reduce negative environmental impacts of the food system	5	4	3	12
Increase social capital associated with the food system	2	2	0	4
Support Indigenous food sovereignty	1	4	0	5
Food security is increased in the bioregion.	2	7	1	10

Table 2: Voting results from group prioritization for preliminary food system indicators

Preliminary Food System Indicators	RDNO	RDCO	RDOS	Total votes
Food self-reliance	4	4	7	15
Land available for food production	2	4	11	17
Type of food produced	10	2	2	14
Post-production facilities	3	2	8	13
Location of post-production facilities	1	0	1	2
Nutrient surplus or deficit	0	6	1	7
Type and availability of local nutrients	0	6	0	6
Food imports	3	0	4	7
Food exports	1	1	0	2
Tax revenue	0	0	0	0
Number of food system jobs	2	3	1	6
Total GDP from food system activities	0	4	0	4
Total employment income (food system jobs)	6	1	6	13
Water needed for agriculture	2	1	5	8
Quality of wildlife habitat (on agricultural land)	2	4	0	6
Salmon habitat (amount, quality)	1	3	3	7
Carbon stocks in aboveground woody plants on ag. land	4	1	1	6
GHG emissions from food production	0	1	2	3
Ecological footprint of food consumption	0	1	0	1
Networks and engagement indicators	0	2	0	2
Life satisfaction / Quality of Life	0	0	0	0
Connection to community and sense of belonging	1	4	0	5
Social cohesion	0	0	0	0

5. Online Form Results

The research team made the food system objective and indicator prioritization worksheet available online to those who were unable to attend in person workshops in the Okanagan. A total of 8 responses were collected through the online form. Four respondents identifying as from the Central Okanagan, and 4 from the Okanagan-Similkameen. Respondents identified with a variety of sectors, including; government (3 respondents), environment (1 respondent), retail (1 respondent), citizen (1 respondent), production (1 respondent), and other (1 respondent).

A brief introductory video was created to familiarize respondents with the nature of the project and the preliminary objectives and indicators and was

available online for respondents to view prior to completing the form. Online respondents ranked the objectives and indicators using the same high (H), medium (M) and low (L) priority ranking system employed at the in person stakeholder workshops.

Online respondents prioritized the objective *preserve agricultural land for food production* highest, followed by *water use for agriculture does not impact ecological integrity*, and *increase food self-reliance*. Environmental enhancement objectives (i.e. climate change mitigation, and wildlife habitat) were also highly ranked objectives. Priority ranking results collected from online form can be found in [Figure 10](#) and [Figure 11](#).

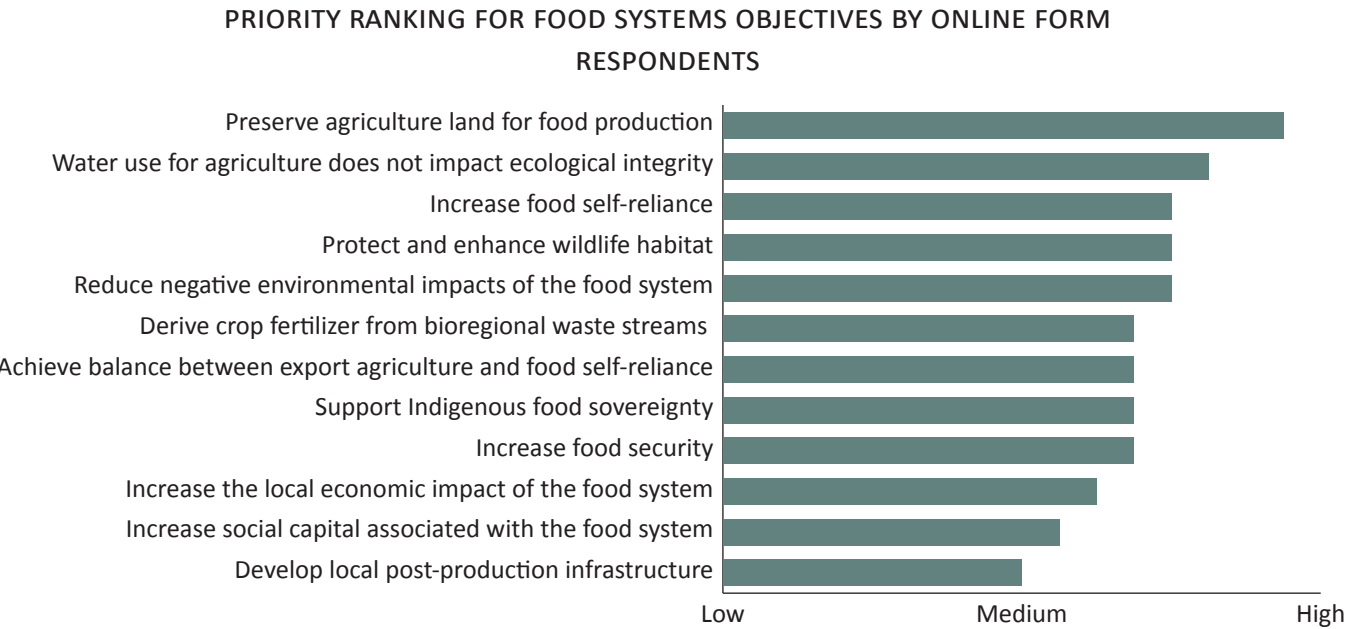


Figure 10: Ranking of preliminary food system objectives from online form respondents

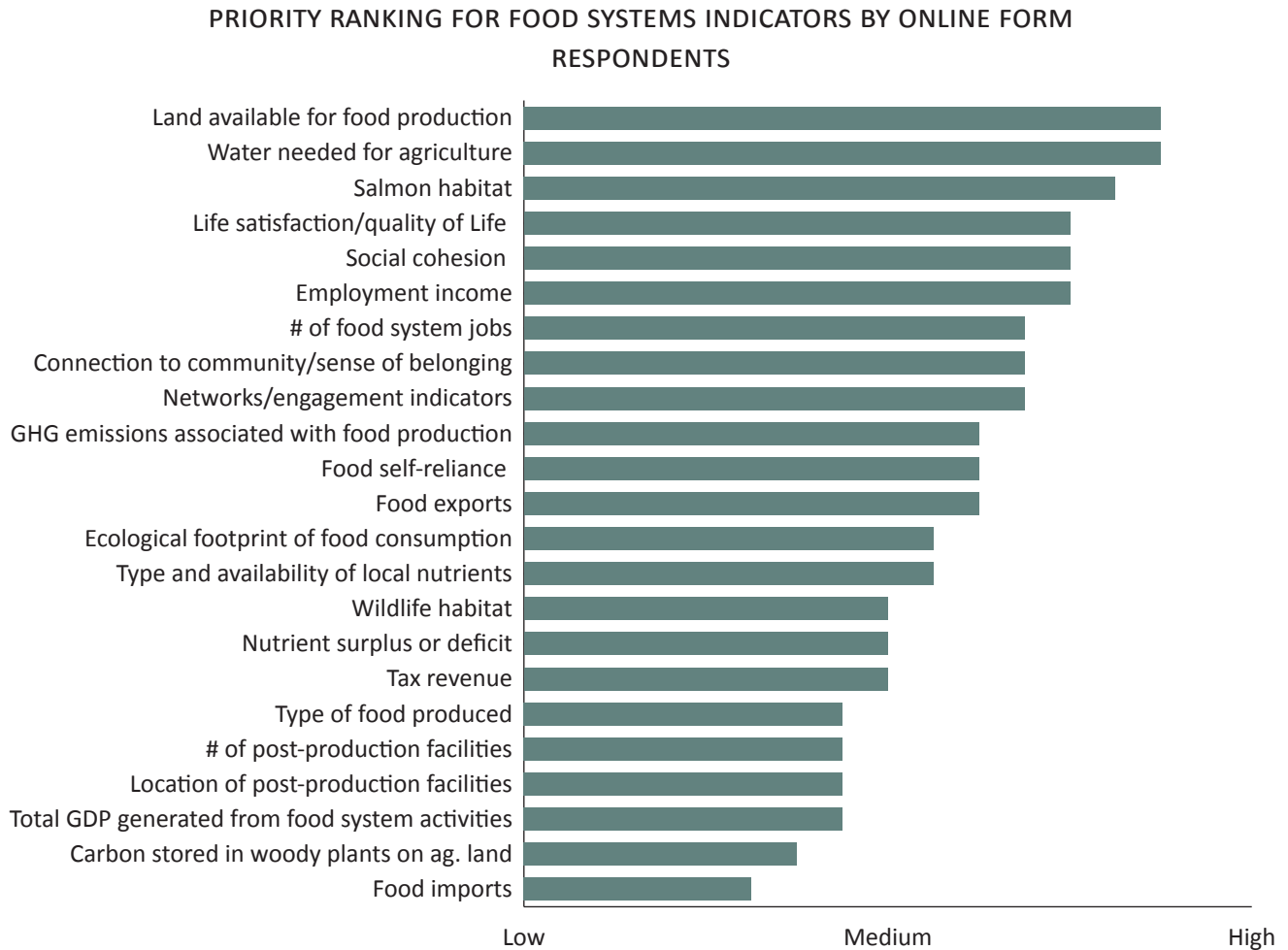


Figure 11: Ranking of preliminary food system indicators collected from online form respondents

6. COABC Conference Session Results

The Certified Organics Association of BC (COABC) annual conference was held in Vernon, BC on February 22-24, 2019. In a conference session on February 23rd, the research team presented an overview of the OBFSDP, similar to that given in the three stakeholder workshops, and also asked delegates to complete the objectives and indicators prioritization worksheet. This provided an additional opportunity to collect feedback for refinement of the objectives and indicators, and development of the scenarios. Following this, the group had an open discussion about the objectives and indicators.

In total, 19 worksheets were collected. Respondents were a mix of producers, COABC inspectors, and engaged community members/non-profit sector participants. Eleven of these 19 respondents lived in the bioregion (Four each from RDNO and RDOS, three from RDCO). The remaining eight were from greater Vancouver, and one from the Yukon. For the purpose of this report, only respondents who reside in the bioregion are included in this analysis.

Like the results from the January workshops and from online feedback, preserve agricultural land for food production was the highest ranked objective. The results from conference delegates from within the bioregion are summarized below in [Figure 12](#) and [Figure 13](#).

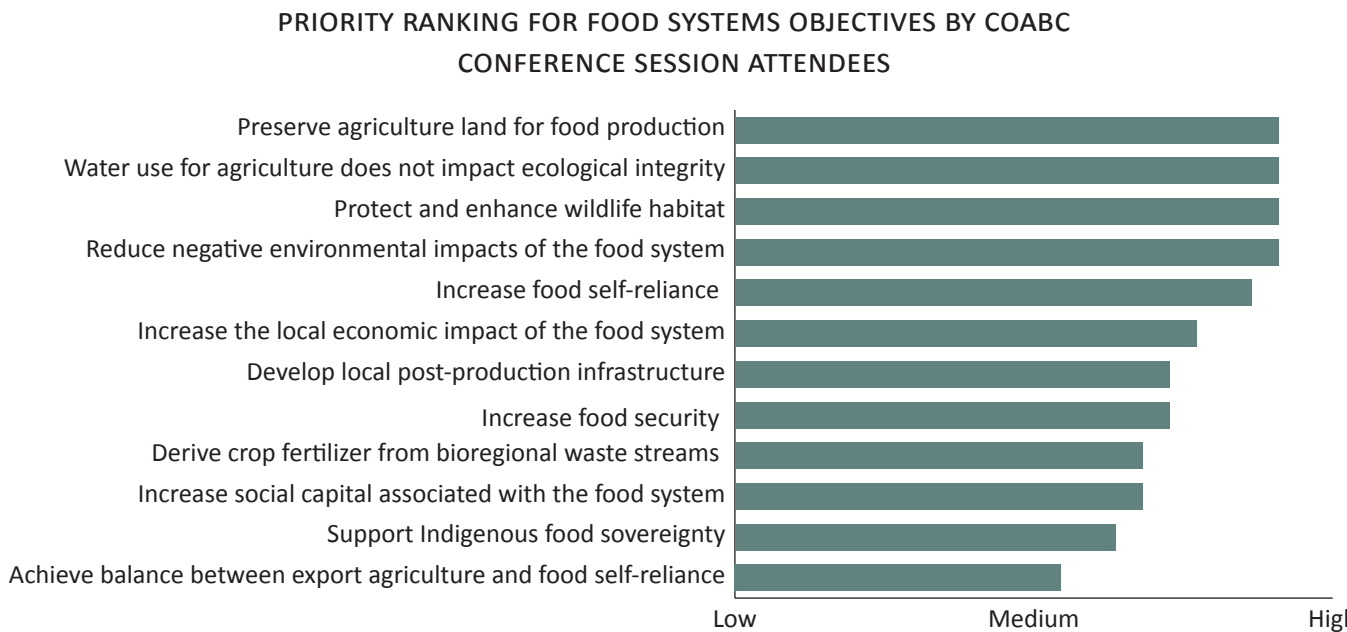


Figure 12: Ranking of preliminary food system objectives from Okanagan bioregion respondents at the 2019 COABC conference session.

PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY COABC
CONFERENCE SESSION ATTENDEES

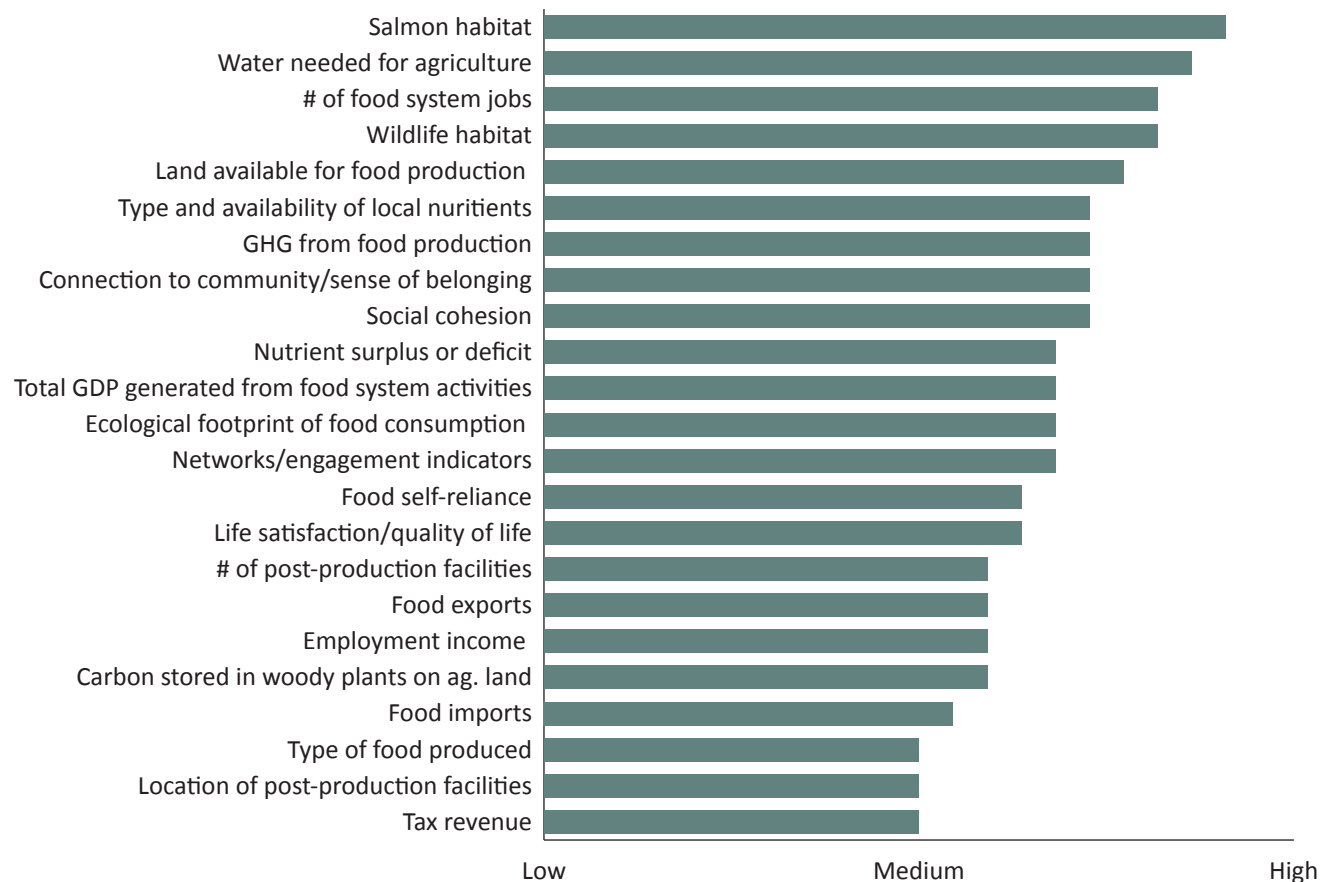


Figure 13: Ranking of preliminary food system indicators from Okanagan bioregion respondents at the 2019 COABC conference session.

7. Comparing Stakeholder Feedback

Response from stakeholders from each of the three feedback forums was relatively consistent. Comparison of the responses from the workshops, online form and COABC conference session is shown in [Figure 14](#) and [Figure 15](#). All Okanagan bioregion stakeholders ranked the objective to

preserve agricultural land for food production highest. COABC conference attendees ranked other environmental objectives, such as; water use, wildlife habitat, and negative environmental impacts of the food system are reduced equally high.

The objective to increase the local economic impact of the food system was ranked high by workshop participants and COABC conference attendees, but notably lower in online feedback.

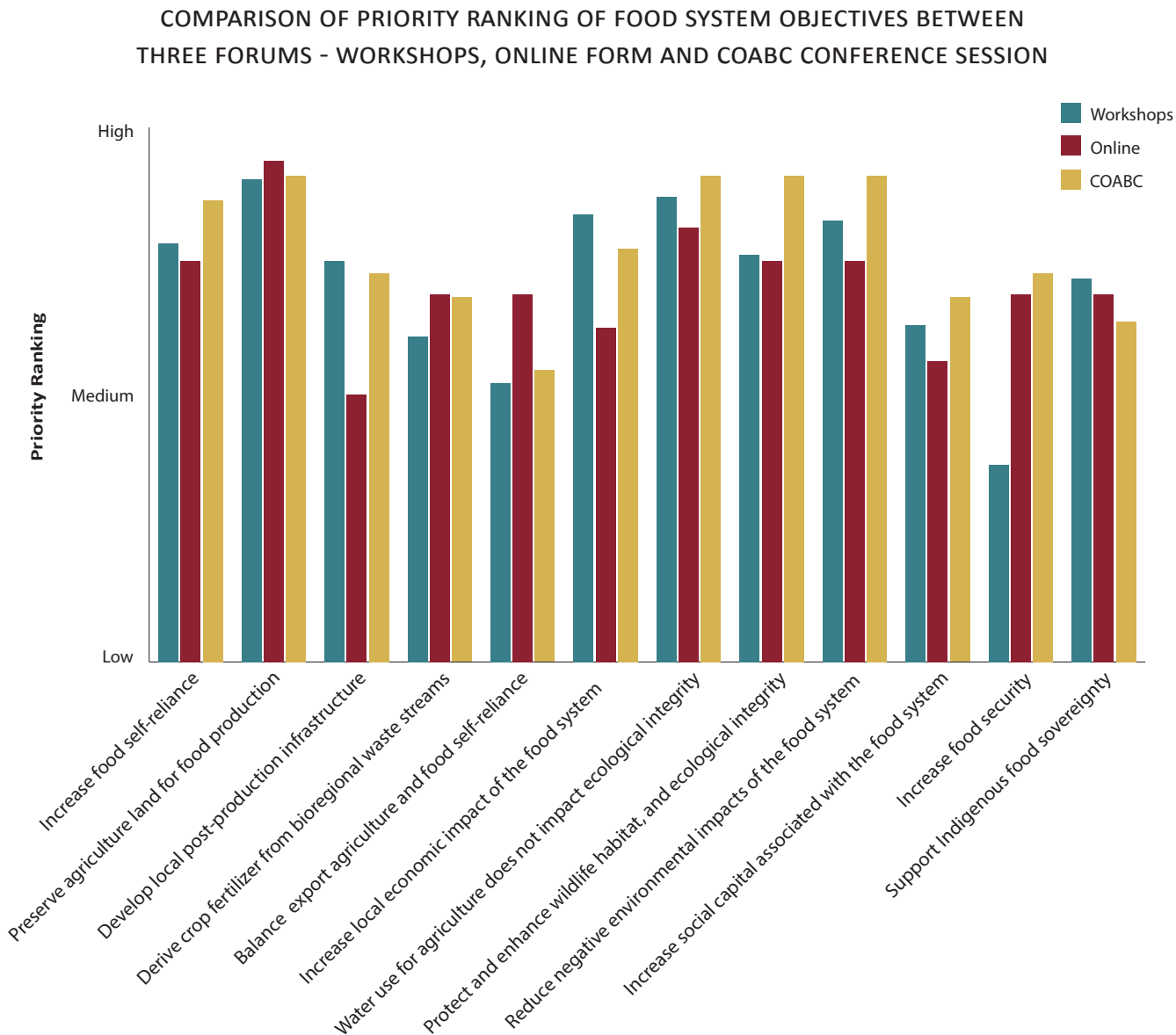


Figure 14: Comparison of food system objective rankings from in person stakeholder workshops, online form, and COABC conference session.

COMPARISON OF PRIORITY RANKING OF FOOD SYSTEM INDICATORS BETWEEN
THREE FORUMS - WORKSHOPS, ONLINE FORM AND COABC CONFERENCE

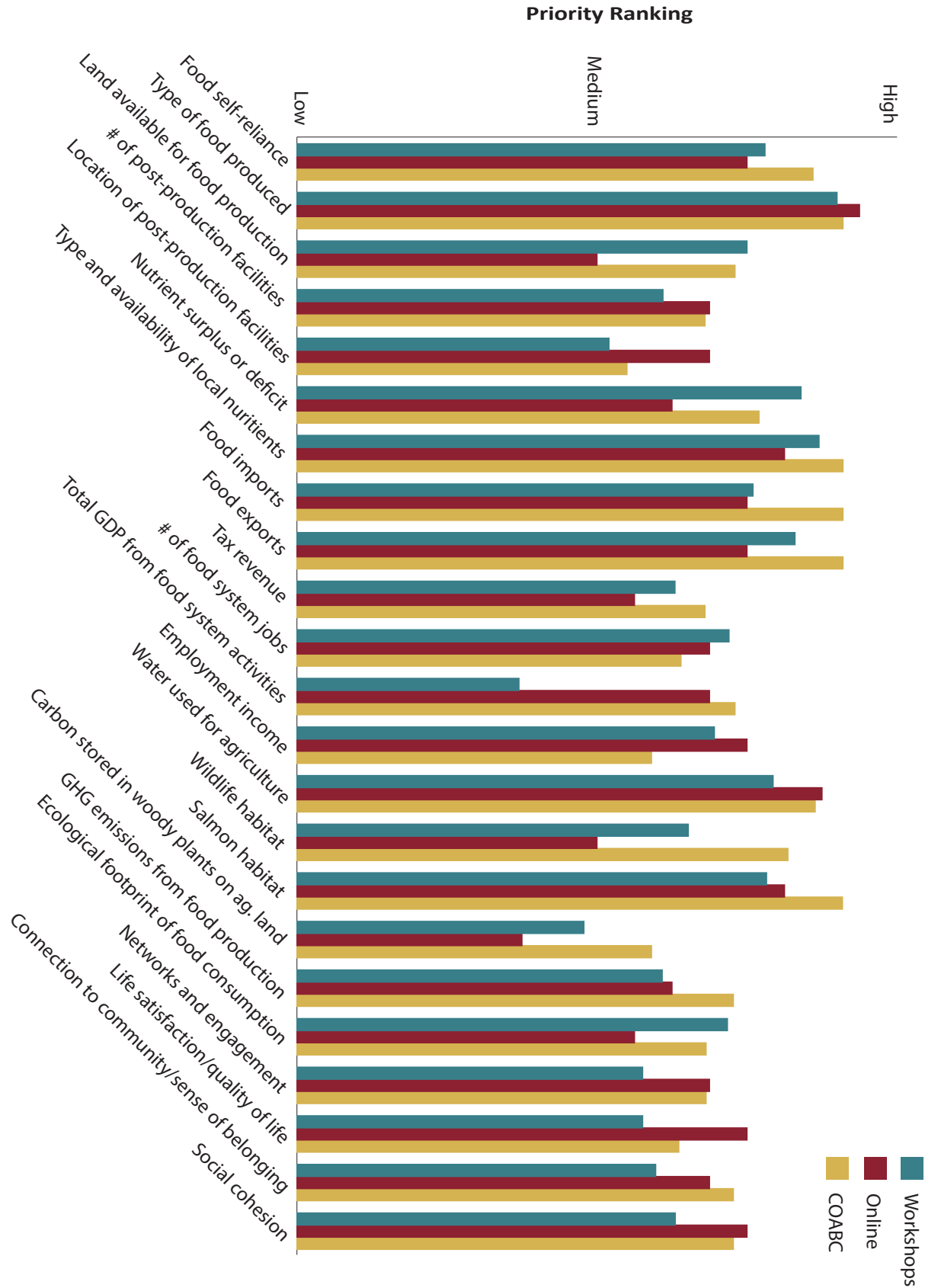


Figure 15: Comparison of food system indicators rankings from in person stakeholder workshops, online form, and COABC conference session.

Develop post-production infrastructure was among the highest ranked objectives by workshop respondents, but lower among the other respondents. The lack of accessible and appropriate post-production and processing facilities for agricultural products grown in the Okanagan was a concern for workshop respondents. It was recognized that there was once a significant processing sector in the Okanagan, supporting a diverse production sector, however much of this has been lost in recent decades.

In addition to analyzing the combined priority ranking, we explore here some of the priority differences between the three regional districts: Regional District of North Okanagan (RDNO), Regional District of Central Okanagan (RDCO), and Regional District of Okanagan-Similkameen (RDOS).

The objective to preserve agricultural land for food production was ranked highest in the RDNO and the RDOS. While this objective was ranked high in the RDCO, participants ranked negative environmental impacts are reduced as the highest objective

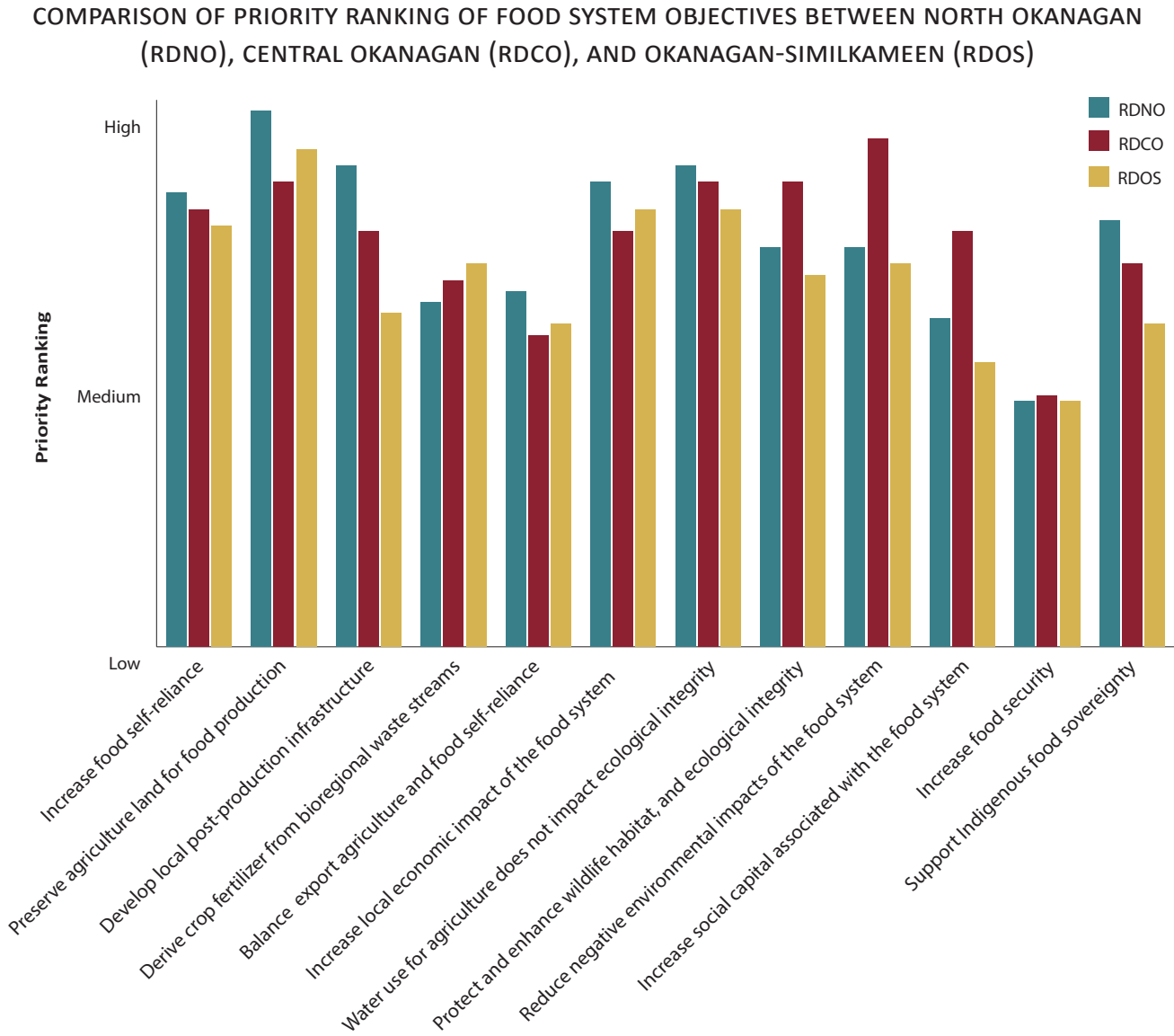


Figure 16: Comparison of food system objective rankings from the North Okanagan, Central Okanagan and Okanagan-Similkameen.

COMPARISON OF PRIORITY RANKING OF FOOD SYSTEM INDICATORS BETWEEN NORTH OKANAGAN(RDNO), CENTRAL OKANAGAN (RDNO) AND OKANAGAN-SIMILKAMEEN (RDOS)

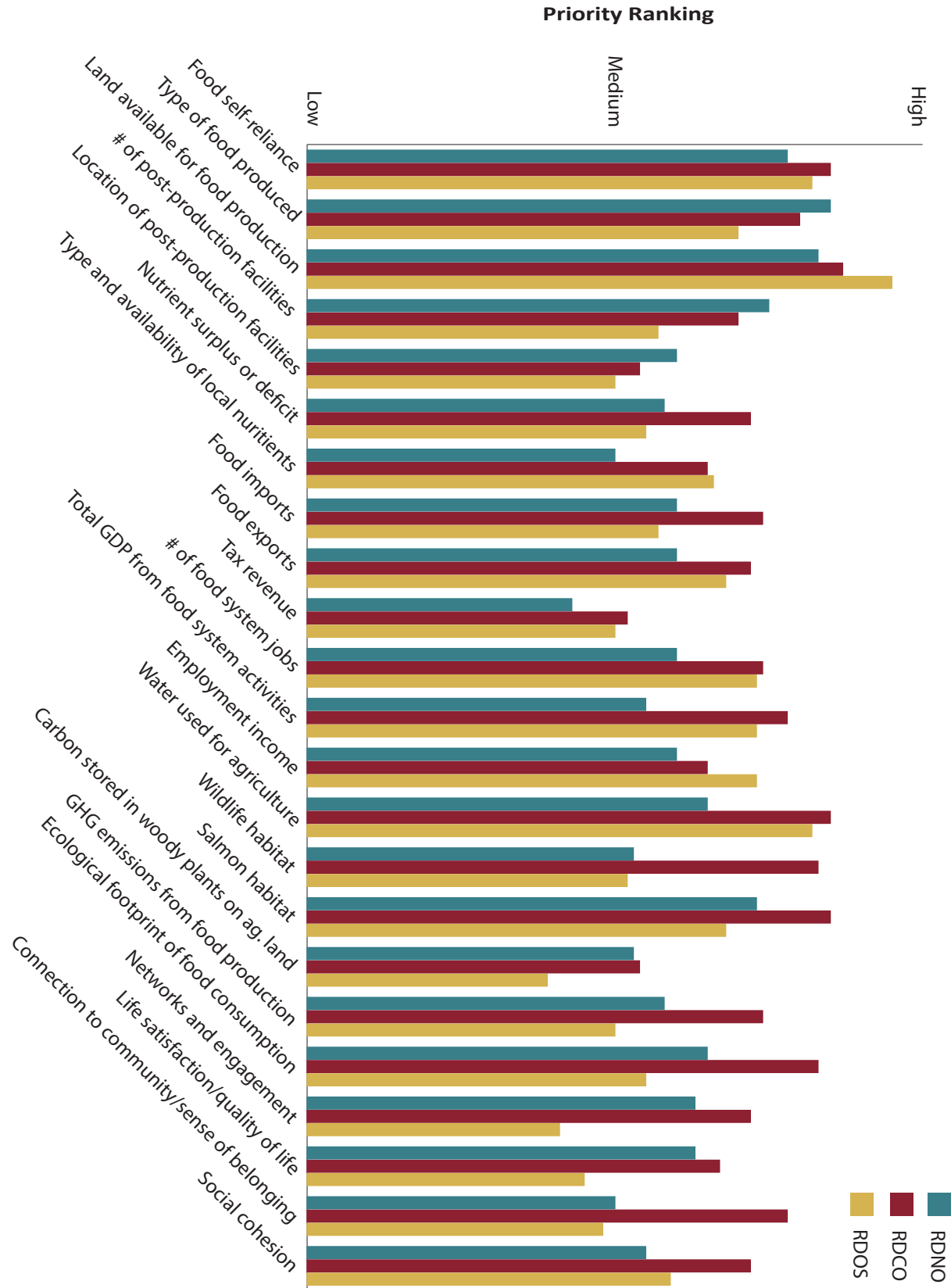


Figure 17: Comparison of food system indicators rankings from the North Okanagan, Central Okanagan and Okanagan-Similkameen.

([Figure 16](#)). This was followed closely by other environmental indicators related to water use, and habitat protection.

The highest ranked indicator in the RDCO and RDOS is the amount of land available for food production. In the RDNO the type and amount of food produced ranked highest, followed closely by the amount of land available for food production ([Figure 17](#)).

In all three regional districts food self-reliance ranked relatively high as an indicator. This is consistent with what we heard from participants who said that although they felt that food self-reliance may not be an ultimate goal for the bioregion – it is a valuable metric for understanding the resilience of the bioregion’s food system.

The RDCO also ranked environmental indicators high, such as; wildlife habitat, salmon habitat, and water use for agriculture compared with other regional districts. Participants in the RDCO ranked social capital indicators (i.e. networks and engagement, life satisfaction/quality of life, connection to community/sense of belonging, and social cohesion) significantly higher than participants in other regions.

8. Discussion and Key Questions

Significance of Food Self-Reliance

There is a strong regional identity in the Okanagan related to agriculture, and stakeholders in the region recognize the value of local food. However, given the high agricultural capability of the bioregion, and the relatively small population, there is particular value placed on trade between other regions in BC, and Alberta as a neighboring province where Okanagan products (i.e. tree fruits) are in demand. When discussing food self-reliance, participants were interested in understanding how the Okanagan relates to other bioregions in the province to achieve resiliency in its food supply,

than with achieving the goal of Okanagan bioregion food self-reliance (separate from neighbouring regions). Many participants suggested that food self-reliance may not be considered the ultimate goal in a region that is well suited to production of high-value crops that are not produced in high volumes in other areas of the province. There is a general interest in increasing the availability of local food, but stakeholders recognize and want to maintain, and explore the unique agricultural capability of the bioregion.

Increasing bioregional food self-reliance was tied for 4th place overall ranking with increasing the local economic impact of the food system, behind objectives to preserve agricultural land, protecting water resources and decreasing negative environmental impacts of the food system. However, the ability to produce food for local people is still considered a desirable outcome of a sustainable, bioregional food system. Many participants conveyed sentiments that food self-reliance was closely linked to many of the other, more highly ranked objectives. Food self-reliance remains a focus of this study because it allows us to assess the agricultural capacity of the bioregion – and articulate related economic and environmental outcomes which were highly prioritized in the stakeholder feedback. As such, we remain comfortable maintaining a focus on bioregional food self-reliance that is predicated on achievement of concomitant food system goals.

Modeling More Sustainable Diets

Based on the new Canada Food Guide released in early 2019, and increasing awareness of the environmental impact of current diets, participants expressed interest in modeling the potential impacts of adopting more sustainable diets. The research team will consider how to best integrate information from the new Canada Food Guide which will be released by the fall of 2019, and other dietary regimes (e.g. Lancet EAT sustainable diet recommendations) into the study.

First Nations Partnerships and Leadership

Stakeholders verified the thinking of the research team regarding the need for strong partnerships

with First Nations and leadership from within communities for any exploration of Indigenous food sovereignty, and that bioregional food system design must include Indigenous perspectives and predilections. Success in Indigenous food systems research requires partnerships to be established with First Nations communities and leaders, and a deeper understanding of Indigenous food systems paradigms and ways of knowing. The research team places a supremely high priority on this and hopes their work will be effective in this regard.

Farm and Food System Labour

Farm and food system labour is of specific interest in the Okanagan. With a significant foreign, temporary workforce, issues related to housing, working conditions, and wages are of concern. Participants also recognized the increased labour requirements of regionalized food systems raising questions of how the labour force in the region would support growth in the food and agriculture sectors. Participants suggested expanding the proposed analysis of the number of jobs, to look at where those jobs are in the food system (i.e. production, processing etc.), and what type of jobs are created (full time, part time, temporary) as a way to better communicate the local economic and social impacts of the food system. Participants were also interested in the skills training and educational resources available for food system employees.

Wine Grape Production and the Wine Sector

Wine grape production and wine making is a significant agricultural activity in the Okanagan bioregion (particularly in the RDOS). The wine sector also contributes significantly to the regional identity and economic vitality of the Okanagan. As a result, many stakeholders discussed the need to better understand the impacts of the wine sector on agriculture more broadly, and on food self-reliance in the bioregion. There was also significant discussion in the Okanagan-Similkameen (where a majority of the region's wineries are located) about the rationale to exclude wine, as a non-food product, from food self-reliance analysis in the bioregion. For the purpose of this study, wine (as a value added agricultural product) is not included in food self-reliance calculations because it is not

a food product per se, and is not included in the Canada Food Guide. However, as a significant production and land use sector, wine grape growing will be evaluated based on the use and allocation of resources required to support the sector relative to increased bioregional food production conferring increased bioregional food self-reliance.

Policy and Regulation

During the workshops, the issue of policy changes necessary to support the local food system was often mentioned. Stakeholders had questions about the existing policy barriers to expanding the post-production sector in particular, including; zoning, licensing, and food safety. This is of significant concern for food products requiring processing, such as meats. Other policy concerns related to land use, water use, and taxation. It was suggested that land use and regulatory zoning could be effective mechanisms for food system change because of the significant influence that local and regional governments have in these areas. Participants were particularly interested in understanding how regulation impacts processing capacity, particularly for small-scale meat production, and other value added processing.

Food System Education

During the workshops many participants commented on the need for more education about the local food system, and the challenges faced by local farmers. Participants brought up the need to increase awareness amongst the general public, and amongst decision makers. A few new suggestions for indicators and areas of inquiry were also raised at the COABC conference including the role of education and the importance of creating an educated consumer base to shift the market in favour of local/regional products and food systems overall. Respondents suggested that local retailers could be surveyed over time regarding the number of local products carried.

Implementation Strategies

In discussion with stakeholders, implementation was a common concern. Many recognized that there are a number of barriers to food system regionalization. Some stakeholders indicated that decision makers

do not understand the interconnectedness of the food system, and emphasized the need to create effective communications materials specifically targeting decision makers. Providing data driven information about the implication of food systems decisions is a primary goal of this project. The need for a clear and actionable implementation plan for food system regionalization would be a valuable outcome of this project.

districts to work together in pursuit of shared food system, economic development, and community development goals.

As this project advances, the research team will continue to engage in outreach with stakeholders in the bioregion. This includes regular meetings with the project Advisory committee, and planned outreach with First Nations, and other key stakeholder groups.

9. Conclusion and Next Steps

The Okanagan bioregion stakeholder feedback provided valuable information for the advancement of the Okanagan Bioregion Food System Design Project. Feedback and suggestions from stakeholder workshops, an online form, and the COABC Conference respondents will directly inform the finalization of the Okanagan Bioregion Food System Design Project food system objectives, and further refine the appropriateness and value of indicators. The research team will draw on this information for the development of various future scenarios to be modeled, and comparatively evaluated. These scenarios will ask “what if” questions and help stakeholders in the bioregion better understand the implications of various food system decisions.

In the Okanagan, there was a sense that the bioregion plays an important role in the agricultural sector of the province of BC. The bioregion is a significant producer, supplying markets in other BC bioregions, and in neighbouring provinces. Based on all the collected feedback, we understand that land use – and the associated implications around affordability, access, and environmental impacts is of significant concern for Okanagan bioregion stakeholders. Environmental considerations related to water, salmon habitat and climate change were often the focus of discussion. We also saw consistency in the high priority issues across the three regional districts which indicates that there may be significant potential for regional

Appendix A:

Okanagan Bioregion Food System Design Project Advisory Committee membership List

Table 3: Okanagan Advisory Committee List of Members

Name	Position	Affiliation
Janice Talarico	Manager, Healthy Communities	Interior Health
Jill Worboys	Public Health Dietician	Interior Health
Kristi Estergaard	Public Health Dietician	Interior Health
Linda Boyd	Public Health Dietician	Interior Health
Corey Brown	Farmer, Chair	Blackbird Organics/ Similkameen Okanagan Organic Producers Association
Brad Dollevoet	Manager, Development Services	RDOS
Janelle Taylor	Planner	RDCO
Laura Frank	Regional Planning Projects Manager	RDNO
Laura Code	North Okanagan Agrologist	Ministry of Agriculture
Toni Boot	Mayor	District of Summerland, RDOS Board Member

Appendix B:

Food Systems Objectives and Indicators Prioritization Worksheet

Okanagan Bioregion Food System Objectives and Indicators Worksheet

What food system sector best describes you?

- | | | | |
|-------------------------------------|-------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Production | <input type="checkbox"/> Government | <input type="checkbox"/> Environment | <input type="checkbox"/> Other (please specify): |
| <input type="checkbox"/> Processing | <input type="checkbox"/> Academia | <input type="checkbox"/> First Nation | _____ |
| <input type="checkbox"/> Retail | <input type="checkbox"/> Non-Profit | <input type="checkbox"/> Citizen | _____ |

Participant Instructions:

1. Review the Food System Objectives listed in the chart on the opposite side of this page. Assign a rank to each one of these objectives. Do you agree that these are desired objectives of the food system? Would you add or remove any of these? Please record your thoughts below.

Ranking Instructions:

High (H): This objective is extremely important in the food system
 Medium (M): This objective is somewhat important in the food system
 Low (L): This objective is not that important in the food system

2. Review the Food System Indicators. Assign a rank to each one of these indicators based on the value this information would have for food systems work in the bioregion.

Ranking Instructions:

High(H): This indicator is extremely important in the food system
 Medium(M): This indicator is somewhat important in the food system
 Low(L): This indicator is not that important in the food system

3. Once you have completed the ranking exercise, please brainstorm additional indicators that would be valuable or are of particular interest. (**Note:** What can be measured is subject to available data. However, the research team will do their best to investigate any indicators that are of interest to stakeholders).

Preliminary Food System Objectives	Rank (H-M-L)	Preliminary Food System Indicators	Rank (H-M-L)
Agriculture and Food Production			
Increase food self-reliance within the bioregion.		Food self-reliance (compares the capacity of the bioregion to produce food with the total food need of the population)	
Preserve agriculture land to be used for food production.		Amount and type of food produced	
		Amount of land available for food production	
Develop local post-production infrastructure to support the type and scale of primary food production in the bioregion.		Number and type of post-production facilities in the bioregion	
		Geographic distribution of post-production facilities	
Derive a significant amount of crop fertilizer from bioregional waste streams (i.e. animal manure, municipal waste streams etc.)		Nutrient surplus or deficit (available nutrients compared to crop need)	
		Type and availability of local nutrients	
Economics			
Achieve balance between export oriented agriculture sectors and local food self-reliance.		Amount of food imported to the bioregion	
		Amount of food produced for the export market (outside the bioregion)	
Increase the local economic impact of the food system.		Taxes generated from food system businesses, and activities	
		Number of jobs associated with the food system	
		Total GDP generated from food system activities	
		Income generated from employees working in the food system	
Environment			
Maintain ecological integrity when using water for agriculture (i.e. irrigation and livestock watering)		Amount of water needed for irrigation of crops and livestock watering	
Protect and enhance wildlife habitat, and ecological integrity.		Quality and amount of wildlife habitat (on agriculture land)	
		Quality, amount and location of salmon habitat	
Reduce and mitigate negative environmental impacts of the food system, including those associated with climate change.		Carbon stocks on agricultural land (amount of CO ₂ e stored in aboveground woody plants)	
		Greenhouse Gas Emissions associated with food production (measured in CO ₂ e)	
		Ecological footprint of food consumption (measured in global hectares)	
Society and Culture			
Increase social capital associated with the food system through cooperation, collaboration, and communication.		Networks and engagement indicators (eg. network size, participation, vertical connections, volunteerism, group activities, philanthropic activity)	
		Life satisfaction / Quality of Life (eg. physical and mental health, access to services, knowledge)	
		Connection to community and sense of belonging	
		Social cohesion (eg. trust in people, confidence in institutions, respect for diversity, reciprocity, belonging, social support networks and participation in network groups)	
Increase food security in the bioregion.		<i>(Note: The research team has not identified indicators for these objectives. We are open to ideas, and community research collaborations to help better understand these factors of the food system. Please record your ideas on the other side of this form, question 3.)</i>	
Support Indigenous food sovereignty through leadership and participation of Indigenous peoples in addressing their needs for healthy, traditional, and culturally adapted foods.			

Appendix C: Regional District of North Okanagan Stakeholder Workshop Feedback

PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY WORKSHOP PARTICIPANTS IN THE REGIONAL DISTRICT OF NORTH OKANAGAN

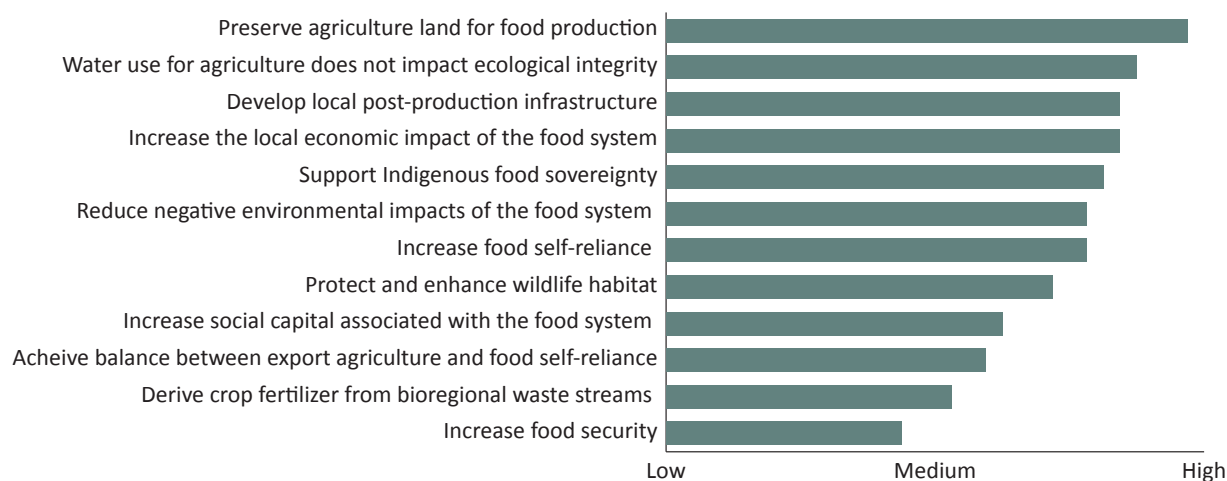


Figure 18: Objective rankings for the stakeholder workshop in the Regional District of North Okanagan from individual prioritization worksheets

PRIORITY RANKING FOR FOOD SYSTEMS INDICATORS BY WORKSHOP PARTICIPANTS IN THE REGIONAL DISTRICT OF NORTH OKANAGAN

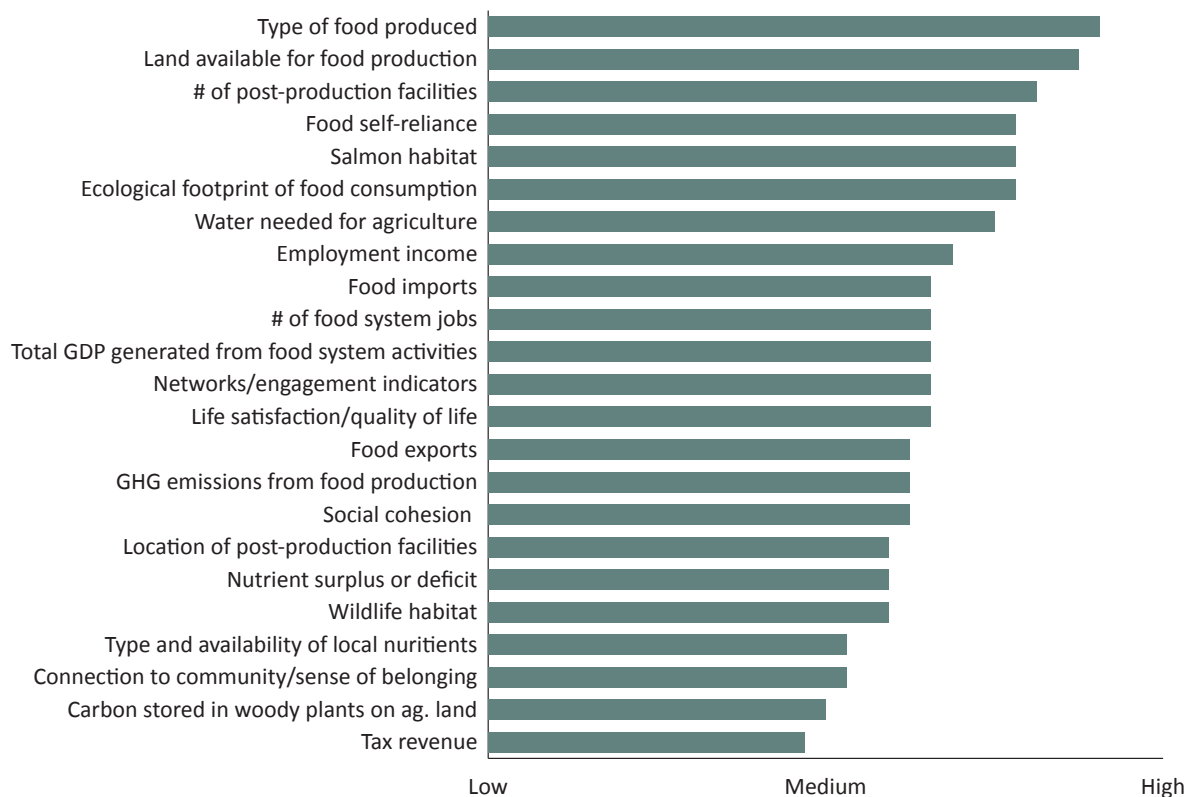


Figure 19: Indicator rankings for the stakeholder workshop in the Regional District of North Okanagan from individual prioritization worksheets

Appendix D: Regional District of Central Okanagan Stakeholder Workshop Feedback

PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY WORKSHOP PARTICIPANTS IN THE REGIONAL DISTRICT OF CENTRAL OKANAGAN

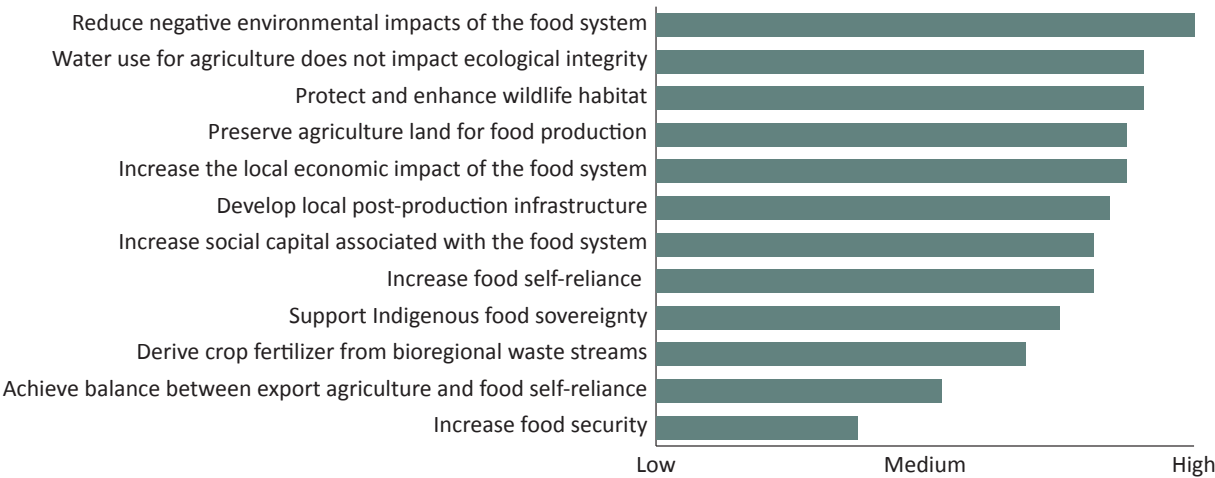


Figure 20: Objective rankings for the stakeholder workshop in the Regional District of Central Okanagan from individual prioritization worksheets

PRIORITY RANKING FOR FOOD SYSTEMS INDICATORS BY WORKSHOP PARTICIPANTS IN THE REGIONAL DISTRICT OF CENTRAL OKANAGAN

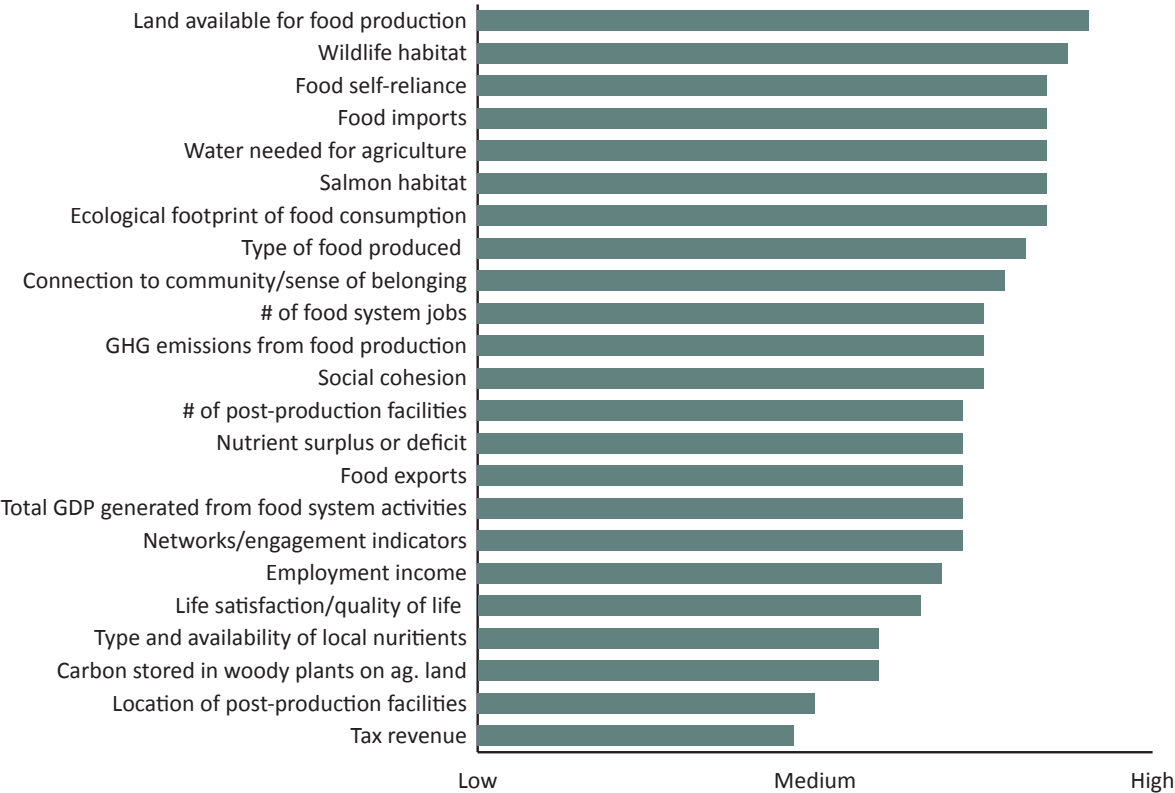


Figure 21: Indicator rankings for the stakeholder workshop in the Regional District of Central Okanagan from individual prioritization worksheets

Appendix E: Regional District of Okanagan-Similkameen Stakeholder Workshop Feedback

**PRIORITY RANKING FOR FOOD SYSTEMS OBJECTIVES BY WORKSHOP
PARTICIPANTS IN THE REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN**

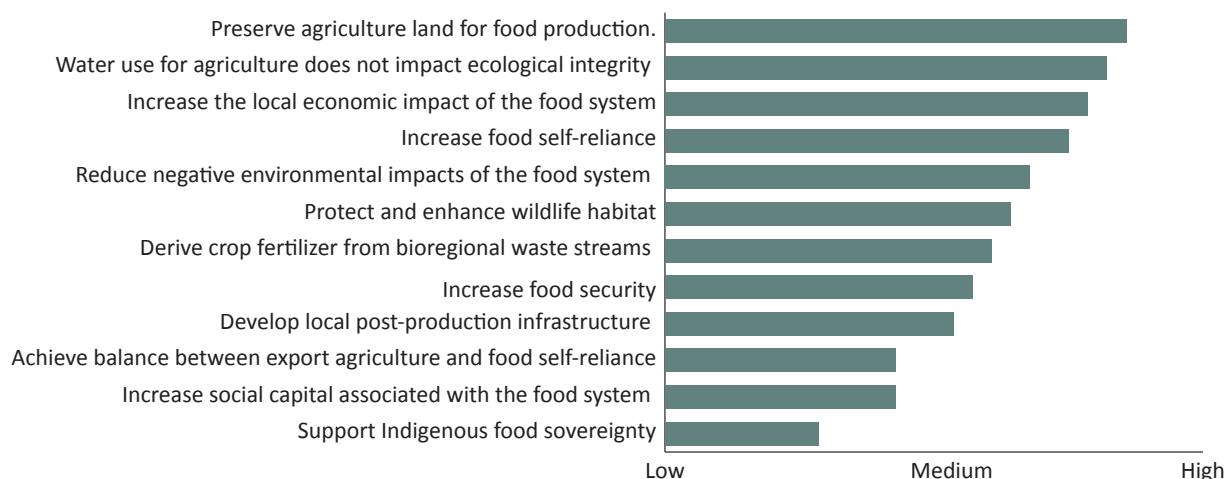


Figure 22: Objective rankings for the stakeholder workshop in Okanagan-Similkameen from individual prioritization worksheets

**PRIORITY RANKING FOR FOOD SYSTEMS INDICATORS BY WORKSHOP
PARTICIPANTS IN THE REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN**

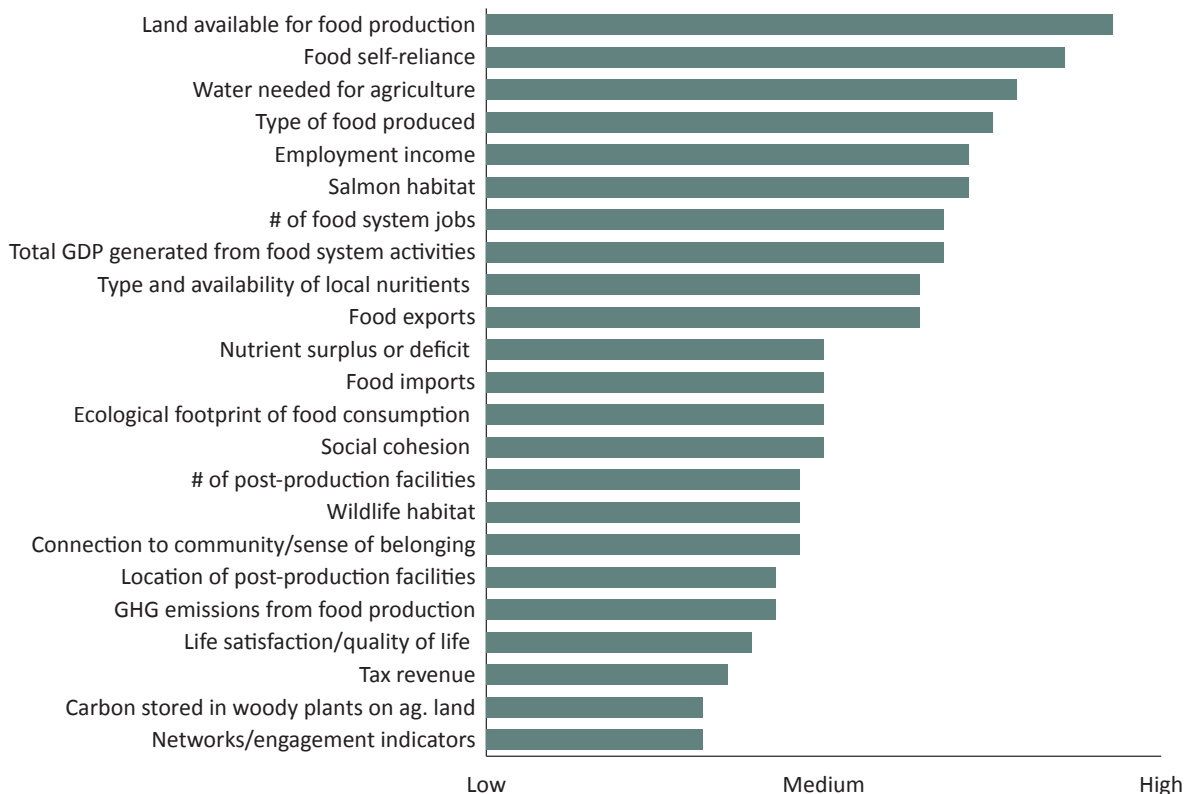


Figure 23: Indicator rankings for the stakeholder workshop in Okanagan-Similkameen from individual prioritization worksheets

Appendix F:

Group prioritization exercise results for new indicators

Table 4: Results from group prioritization for new food system indicators generated through discussion with stakeholders

Preliminary Food System Indicators	RDNO votes	RDCO votes	RDOS votes
Access to Land	0		
Agricultural land prices	0	1	2
Agriculture land ownership/turnover	8	2	
Change in land use (rural to urban)		1	
% of non-ALR land being farmed		2	
Production methods	3		
Number of new farmers	1		
Type of jobs		0	0
Agriculture and post production skills		3	1
Foreign worker jobs		1	1
Education and training opportunities			0
Soil carbon sequestration	2		
Food Waste	0	3	
Price of water			4
Access to local food	1		
Amount of money spent on direct marketing	7		2
# of restaurants using local food		1	0
Institutional food procurement			2
Post-production regulations	7		
Export locations (international vs. BC or Alberta)	5		
Food costs		0	
Education and awareness of the food system	7	3	
Urban agriculture		2	
population health and impact of local food		2	
% of indigenous food in diets		4	
Use of food banks			0
Cultural and dietary needs met			0
Agri-tourism impact on food production			1
Cross sector collaborations	1		

Note: Blank cells mean that indicators were not suggested by participants in that regional district. "0" value means that the indicator was identified, but did not receive any votes during the group prioritization exercise.