

## About the Project

Researchers at Kwantlen Polytechnic University's *Institute for Sustainable Food Systems (ISFS)* are leading a project to explore the economic, environmental stewardship and food self-reliance potential of a bioregional food system in Southwest BC (SWBC). This project will produce information that can be used by municipal and regional governments, food system advocates, farmers, Indigenous communities, entrepreneurs and others interested in the future of SWBC's food system.

Bioregions are areas that share similar topography, plant and animal life, and human culture. They are largely based on eco-regions but also incorporate human settlement areas, activity patterns, and political boundaries. The SWBC Bioregion includes Metro Vancouver, the Fraser Valley, Sunshine Coast, Squamish Lillooet, and Powell River Regional Districts, and the traditional territories of the Coast Salish People.



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## Why a Bioregional Food System?

Climate change, rising oil costs, and the degradation of the environment are creating uncertainties in global food production. In SWBC, we are losing our capacity to grow food for local consumption. Farms are being lost and small lots in the ALR are at risk of development. Local processing capacity is nearly absent. Development and expansion of the SWBC food system will help to build local resilience and adaptive capacity. It is estimated that residents of SWBC spend over \$6 billion per year on food; a SWBC food system could capture an increased share of this spending and see it circulate within the regional economy.

A bioregional food system respects the boundaries and leverages the opportunities of an ecological and cultural region beyond the conventional delineations of municipal and regional boundaries. Our planning horizon is 2050. What is the potential for a re-localized food system in BC? How many jobs can a re-localized food system support and how much can it contribute to the regional economy? How can this kind of food system reduce GHG emissions and address serious environmental concerns? These are some of the questions the ISFS team is trying to answer.

## Project Highlights

- Endorsed and supported by the Agricultural Land Commission and a growing list of municipalities, regional districts, and other organizations. Funded by the Real Estate Foundation of British Columbia, R. Howard Webster Foundation, Vancity Community Foundation and *enviroFund™*, Vancouver Foundation, and a growing list of regional and municipal governments.
- Scenario approach to explore the potentials of a future SWBC food system.
- Food system scope includes agricultural production, storage, processing, and distribution.
- A project advisory committee, Indigenous advisory committee and academic advisory committee provide advice on methodology, research and engagement.

## Project Goals

Identify ways to strengthen the regional economy by:

- Retaining more of the “local food dollar” and position the agri-food sector to contribute directly to the regional economy; and,
- Creating jobs and opportunities for small to medium sized businesses.

Support agriculture by:

- Identifying the need for regional processing, storage and distribution;
- Providing regionally appropriate information for current and future farmers; and,
- Identifying opportunities for expanding SWBC agriculture.

Promote environmental stewardship by:

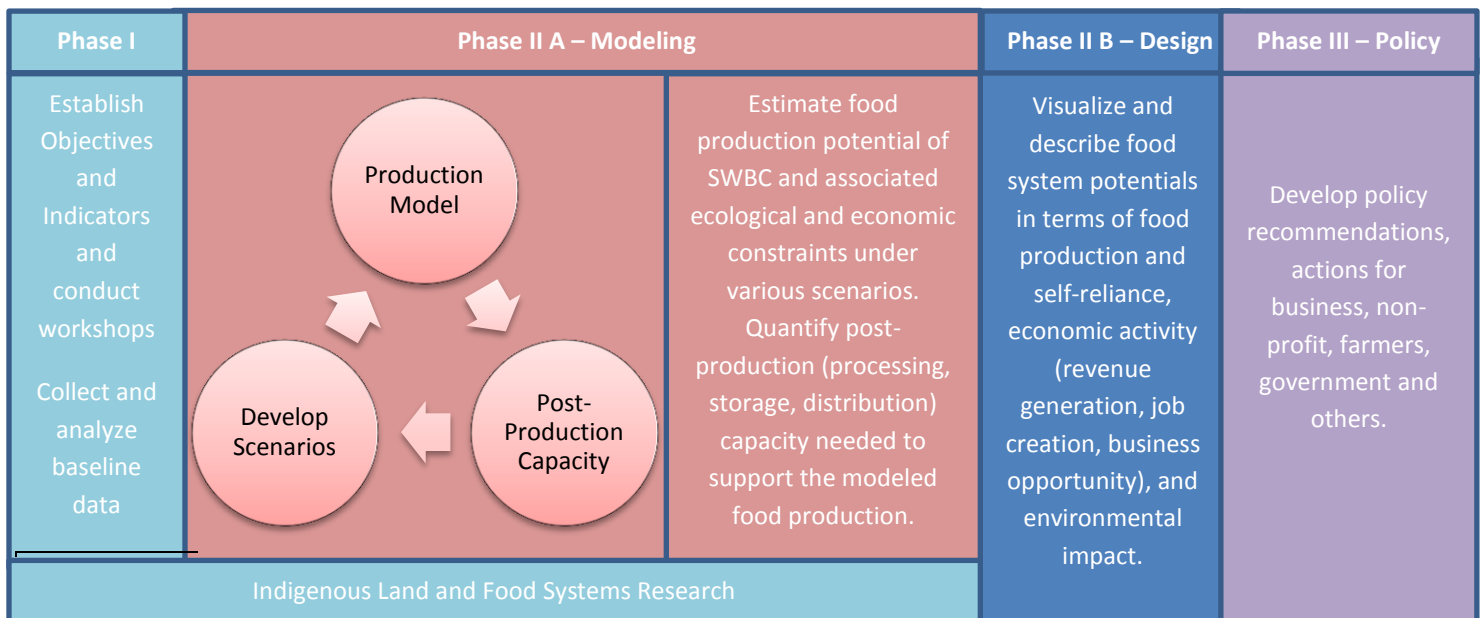
- Exploring strategies to reduce the environmental impact of SWBC’s food system;
- Exploring strategies to reduce greenhouse gas emissions from SWBC agriculture; and,
- Identifying means to integrate agriculture with natural landscapes.

Strengthen communities and build social capital by:

- Working with Indigenous communities of focus to identify points of intersection and opportunities for integration of an Indigenous land and food systems perspectives and priorities; and,
- Bringing together diverse communities by catalyzing action around mutual goals and shared food system values.

## Project Phases

The diagram illustrates the three project phases being conducted over three years (2012-2015). The team is developing a mathematical model using food self-reliance and agricultural production as a starting point. The model is only a starting point for exploring the potential of a bioregional food system. The design and policy phases will allow the team to incorporate broader elements of the food system into the project.



# Project Benefits and Deliverables

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By supporting the project, partners can access the expertise of a unique multi-disciplinary team as well as data and tools relevant to policy development, business, and planning.

## 1. Food System Design

- This report will paint a picture of bioregional food system futures for Southwest BC in 2050 through visualizations and descriptions of their potential economic, environmental and food self-reliance outcomes and impacts. It will describe challenges and opportunities, and provide policy recommendations that could be used to move towards a bioregional food system.

## 2. Economic Development

- **SWBC Farm Enterprise Budgets:** Farm business planning templates for 26 crops and livestock products
- **Revenue Projections:** Projections for increased revenue resulting from re-regionalizing the food system.
- **Job Creation Potential:** Estimates of the potential for job creation and diversification from farming and processing businesses in the Southwest BC bioregion.
- **Study of Food Processing and Distribution Methods in SWBC:** Estimates of post-production capacity needed to support a re-regionalization of the food system.

## 3. Policy, Planning & Governance

- **Local Government Policy Inventory:** An inventory of existing local policies and strategies, and assessment of their ability to aid in the creation of a comprehensive regional food system design and plan.
- **Local Government Policy Cross Jurisdictional Best Practices Review:** An inventory of best practices and innovations in municipal food system policy.

## 4. Indigenous Land and Food Systems Research

- Our Research Associate focused on Indigenous land and food systems and our Indigenous Research Advisory Committee are working toward the goal of positioning Indigenous priorities, perspectives and paradigms in food system research

# Stakeholder Engagement

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The Institute for Sustainable Food Systems is an applied research institute. We believe research must respond to community need and provide solutions for real world challenges. Stakeholders across the food system will be engaged in the project in several ways.

1. June 2014 Stakeholder workshops were held across the bioregion to gather input and priorities on the objectives and indicators for a bioregional food system (see p.4).
2. A project advisory committee was selected and assembled and began meeting in July 2014. This committee provides feedback on project methodology and strategy (see composition on p.5).
3. The engagement team has been meeting with City Councils, Agricultural Advisory Committees, Community Organizations and interested individuals to provide updates on the project and opportunities for input and feedback.

## Food System Design Objectives and Indicators

The following Food System Design Objectives and Indicators were vetted by stakeholders during our June 2014 stakeholder workshops held across SWBC. They are used by the project team to guide baseline research about the SWBC food system and model alternative food system futures for 2050.

Objectives		Indicators	
<b>1</b>	<b>Increase self-reliance in agricultural production</b>	1.1	Degree to which food grown in SWBC contributes to total food consumption and satisfaction of nutritional requirements
		1.2	Quantity of un-farmed land
		1.3	Quantity of agricultural land by land quality
		1.4	Quantity of water needed for crop and livestock production
		1.5	Degree to which livestock feed is produced in SWBC
		1.6	Capacity of storage and processing facilities to support year-round supply of SWBC grown foods
<b>2</b>	<b>Minimize external inputs and optimize soil, water and air quality</b>	2.1	Aboveground carbon balance
		2.2	Number of soil cover days for agricultural land
		2.3	Percentage of crop nutrient demand met or exceeded
		2.4	Quantity of agricultural ammonia emissions
		2.5	Quantity of synthetic fertilizer used
<b>3</b>	<b>Increase biodiversity</b>	3.1	Diversity of crop and livestock types
		3.2	Capacity of agricultural land to provide wildlife habitat
		3.3	Connectivity of non-production habitat
<b>4</b>	<b>Reduce and Remove Greenhouse Gas Emissions</b>	4.1	Tonnes of carbon dioxide emissions from fossil fuel used in food production and transportation
		4.2	Tonnes methane emissions from livestock
		4.3	Tonnes NO <sub>2</sub> emissions from manure management and application; fertilizer application
		4.4	Net terrestrial carbon stocks: soil organic carbon; hectares of forest/woody vegetation available for carbon sequestration
<b>5</b>	<b>Reduce the ecological footprint of the food system</b>	5.1	Ecological Footprint of land-based agricultural food production in SWBC
		5.2	Ecological Footprint of food consumed in SWBC (local plus imported foods)
<b>6</b>	<b>Strengthen and Enhance Local Farm and Ancillary Business</b>	6.1	Number of farms and farm types
		6.2	Characteristics of farm operators
		6.3	Farm profitability in the bioregion
		6.4	Initial farm capital costs in the bioregion
		6.5	Number and location of food processing operations in the bioregion
		6.6	Types and values of alternative marketing channels
		6.7	Retail and farm gate price and quantity comparison of selected food commodities
<b>7</b>	<b>Contribute to the Local Economy</b>	7.1	Gross domestic product (GDP) of the agri-food system sector
		7.2	Number of farm employment opportunities and total farm employee labour income
		7.3	Number of ancillary business employment opportunities and related labour income

## Project Team

<b>Principal Investigator</b>	
<ul style="list-style-type: none"> <li>• <b>Dr. Kent Mullinix</b>- Kwantlen Polytechnic University-ISFS</li> </ul>	
<b>Research Associates</b>	
<p><b>Agriculture</b></p> <ul style="list-style-type: none"> <li>• <b>Dr. Kent Mullinix</b> - ISFS</li> <li>• <b>Caitlin Dorward</b> - ISFS</li> </ul> <p><b>Economics</b></p> <ul style="list-style-type: none"> <li>• <b>Dr. Wallapak Polasub</b> - ISFS</li> <li>• <b>Caroline Chiu</b> - ISFS</li> <li>• <b>Ermias Afeworki</b> – ISFS</li> </ul> <p><b>Planning and Policy</b></p> <ul style="list-style-type: none"> <li>• <b>Dr. Cornelia Sussmann</b> - ISFS</li> <li>• <b>Caitriona Feeney</b> - ISFS</li> </ul> <p><b>Indigenous Land and Food Systems</b></p> <ul style="list-style-type: none"> <li>• <b>Dawn Morrison</b> - ISFS</li> </ul>	<p><b>Ecology</b></p> <ul style="list-style-type: none"> <li>• <b>Dr. Sean Smukler</b> – University of British Columbia, Land and Food Systems</li> <li>• <b>Greg Harris</b> – KPU Biology</li> <li>• <b>Anna Rallings</b> – KPU Sustainable Agriculture</li> </ul> <p><b>Ecological Footprint</b></p> <ul style="list-style-type: none"> <li>• <b>Dr. Meidad Kissinger</b> – Ben-Gurion University of the Negev</li> <li>• <b>Dr. Cornelia Sussmann</b> - ISFS</li> </ul> <p><b>Community Health and Nutrition</b></p> <ul style="list-style-type: none"> <li>• <b>Katie Robinson, R.D.</b> - ISFS</li> </ul>
<b>Research Collaborators</b>	<b>Research Methodology Advisors</b>
<ul style="list-style-type: none"> <li>• <b>Dr. Rebecca Harbut</b> - KPU</li> <li>• <b>Dr. Jan Thompson</b> - KPU</li> <li>• <b>Dr. Lenore Newman</b> - Canada Research Chair in Food Security, University of the Fraser Valley</li> <li>• <b>Dr. Christiana Miewald</b> - Simon Fraser University</li> <li>• <b>Dr. Tara Moreau</b> – University of British Columbia</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Dr. Herb Barbolet</b> - Simon Fraser University-Centre for Sustainable Community Development and Centre for Dialogue</li> <li>• <b>Professor Patrick Condon</b> - University of British Columbia</li> <li>• <b>Dr. Eduardo Jovel</b> - University of British Columbia</li> <li>• <b>Dr. Aleck Ostry</b> - University of Victoria</li> <li>• <b>Dr. Bill Rees</b> - University of British Columbia</li> <li>• <b>Dr. Alejandro Rojas</b> - University of British Columbia</li> <li>• <b>Dr. Hannah Wittman</b> – University of British Columbia</li> </ul>
<b>Project Advisory Committee</b>	
<ul style="list-style-type: none"> <li>• <b>Ann Rowan</b> – Metro Vancouver</li> <li>• <b>Candice Appleby</b> – Small Scale Food Processor Association</li> <li>• <b>Helena Swinkles</b> – Fraser Health Authority</li> <li>• <b>Orlando Schmidt</b> – BC Ministry of Agriculture</li> <li>• <b>Sandy Blue</b> – Invest North Fraser</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sara Dent</b> – Young Agrarians</li> <li>• <b>Shannon Gordon</b> – Whistler Centre for Sustainability</li> <li>• <b>Stefan Misse</b> – Discovery Organics</li> <li>• <b>Trevor Kempthorne</b> – First Nations Agricultural Association</li> <li>• <b>Grant Rice</b> – Surrey White Rock Food Action Coalition</li> </ul>

## Project Support: Endorsement and Funding

Foundation and Other Support	Local and Regional Government Support	Industry and Community Endorsement through Letters of Support
<ul style="list-style-type: none"> <li>• Real Estate Foundation of British Columbia- \$300,000</li> <li>• R. Howard Webster Foundation - \$120,000</li> <li>• VanCity Community Foundation - \$100,000</li> <li>• VanCity <i>enviroFund</i><sup>TM</sup> - \$75,000</li> <li>• Vancouver Foundation - \$40,500</li> <li>• Kwantlen Polytechnic University - \$80,000</li> <li>• Private Donation - \$7,200</li> </ul>	<p><b>Project Endorsement with Funding</b></p> <ul style="list-style-type: none"> <li>• Squamish-Lillooet Regional District- \$5,000</li> <li>• City of Burnaby - \$12,000</li> <li>• City of North Vancouver - \$12,000</li> <li>• District of Maple Ridge - \$12,000</li> <li>• Township of Langley - \$12,000</li> <li>• City of Langley - \$6,000</li> <li>• City of New Westminister - \$6,000</li> <li>• District of Squamish - \$6,000</li> <li>• White Rock - \$2,000</li> </ul> <p><b>Project Endorsement</b></p> <ul style="list-style-type: none"> <li>• Metro Vancouver</li> <li>• Sunshine Coast Regional District</li> <li>• Bowen Island Municipality</li> <li>• City of Abbotsford</li> <li>• City of Pitt Meadows</li> <li>• City of Port Moody</li> <li>• City of Port Coquitlam</li> <li>• Corporation of Delta</li> <li>• District of North Vancouver</li> <li>• District of Mission</li> <li>• Resort Municipality of Whistler</li> <li>• Village of Pemberton</li> </ul>	<ul style="list-style-type: none"> <li>• BC Agricultural Land Commission</li> <li>• Small Scale Food Processor Association</li> <li>• BC First Nations Agricultural Association</li> <li>• BC Food Systems Network</li> <li>• Bowen Agricultural Alliance</li> <li>• Delta School District</li> <li>• Farm Folk City Folk</li> <li>• Fraser Health</li> <li>• Food Matters Chilliwack Invest North Fraser</li> <li>• Langley Community Farmers Market Society</li> <li>• Langley Environmental Partners Society</li> <li>• Richmond Food Security Society</li> <li>• Surrey Board of Trade</li> <li>• The New Westminister Community Food Action Committee</li> <li>• The Surrey/ White Rock Food Action Coalition</li> <li>• Vancouver Food Policy Council</li> <li>• White Rock Surrey and Naturalists' Society</li> <li>• Whistler Centre for Sustainability</li> </ul>

*Many thanks also to the British Columbia Agriculture Council and Metro Vancouver for supporting our proposal to the Real Estate Foundation of British Columbia for initial project funding.*

# The Institute for Sustainable Food Systems

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The Institute for Sustainable Food Systems (ISFS) is a research institute based on KPU's Richmond, BC, campus. Through our integrated program of applied research, extension programming, and community engagement, we investigate and support regional food systems as key elements of sustainable communities. We focus predominantly on British Columbia but also extend our programming to other regions.

Our **applied research** brings forth pertinent information and perspectives on sustainable agriculture and regional food systems. ISFS' multi-disciplinary team investigates the agricultural and food production potential, economics, policy, planning, and ecological sustainability of regional food systems.

Our **extension programming** (knowledge transfer) provides information and technical support for farmers and other food system stakeholders. Current programming includes workshops, talks and conferences, the development of farm business management tools, and our Richmond and Tsawwassen First Nation Farm School programs.

**Community engagement** is central to ISFS' programming, much of which involves community and industry organizations, as well as municipal, regional district, and First Nations governments as partners and collaborators.

For more information about the Institute for Sustainable Food Systems, please visit us online at <http://www.kpu.ca/isfs>.

*Kwantlen Polytechnic University has been serving the Metro Vancouver region for 30 years, and has opened doors to success for more than 250,000 people. Four campuses—Richmond, Surrey, Cloverdale and Langley—offer a comprehensive range of sought-after programs, including business, liberal arts, science, design, health, trades and technology, apprenticeships, horticulture, and academic and career advancement. Over 18,000 students annually have a choice from over 200 programs, including bachelor's degrees, associate degrees, diplomas, certificates and citations.*