

Island Good Food Initiative and Sustainable Institutional Purchasing Project

Carbon *Food*printing Strategy

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This project is part of the Island Good Food Initiative sponsored by Nanaimo Foodshare Society.

Funding for this project was provided by the BC Medical Services Foundation under the auspices of the Vancouver Foundation.



VANCOUVER
FOUNDATION



December 2008

Summary

On behalf of the Nanaimo Foodshare Society, members of the Island Good Food Initiative (IGFI) and Sustainable Institutional Purchasing Pilot Project (SIPPP) initiated a research project to explore the development of a 'carbon footprint' tool to assess the level of carbon emissions associated with local and imported food on Vancouver Island. Legal barriers prevent institutional purchasers from privileging local companies, and therefore locally-grown food, in procurement contracts. However, preference may be given to products with a lower carbon footprint. With this in mind, the intent of this project was to devise a carbon footprint calculation tool to demonstrate the 'carbon advantage' of local food, and to use this carbon advantage to facilitate local food procurement by public institutions on Vancouver Island.

A background report, entitled *The Food Carbon Story*, was prepared to summarize the current state of food carbon accounting practices worldwide. This report uncovered emerging tools for calculating the carbon footprint of food products, and also highlighted significant gaps in the data that would be needed to apply these tools to local and imported food on Vancouver Island. Owing to the complexities of imported food supply chains, a significant, long-term research project would be required to assess the complete 'farm to table' footprint of local and imported foods.

Carbon footprinting methods for assessing the level of emissions generated by a business are much more advanced than food product footprinting tools. Considerable capacity exists in BC, in the form of consulting services, training and available data, to support business carbon footprinting. Although these methods do not produce information on the carbon footprints of individual food products, they can be a valuable instrument for food distributors to use to assess and reduce the overall carbon emissions generated by their companies.

Search meetings were held with members of IGFI and SIPPP to discuss the findings of the background report and brainstorm next steps for the carbon accounting project. Through these meetings, alternate means were identified to overcome the legal barriers to local food procurement by institutional purchasers. At the same time, there was ongoing recognition of the value of carbon footprint calculation from a marketing perspective, and for the ultimate purpose of assessing and reducing carbon emissions of food suppliers. Additional applications of carbon footprint calculation, such as 'carbon offsetting', also generated considerable interest. In particular, the Provincial Government mandate for public institutions to become 'carbon neutral' by 2010 has spurred interest among institutional purchasers to seek ways to use procurement of less carbon intensive products as a credit in institutional greenhouse gas emissions balance sheets.

This Carbon Footprint Strategy was designed to further the ultimate goals of IGFI and SIPPP to increase the capacity of public institutions to purchase local food, while at the same time building local production, processing and distribution capacity to meet this demand.

The following strategic directions are proposed for the IGFI and SIPPP carbon footprint project. Short term strategies include:

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1. **Use Alternative Solutions to Overcome Legal Barriers** - Use alternative mechanisms to enable institutional purchasers to buy locally-grown food that are less resource intensive than carbon *food*printing:
 - **Request for Proposals:** Purchasers can demand a specified quantity of local food in Request for Proposals for food purchasing contracts. All suppliers, both local and non-local companies, will have equal opportunity to meet these requirements. Suppliers of imported foods will have the opportunity to buy from local food suppliers to meet this demand. Or, contract awards can be partitioned such that a business supplying only locally-grown products may be awarded a portion of the contract. This will enable distributors of locally-grown food, such as the Heritage Food Service Co-op, to bid on and be awarded a portion of a food procurement contract.
 - **'Triple Bottom Line' Accounting:** Purchasers can use a 'Triple Bottom Line' accounting framework for evaluating proposals from bidders. This framework consists of evaluation criteria and a scoring system that incorporates attributes of social, economic and ecological sustainability. For example, attributes that can be evaluated include freshness and nutritional value, ecological sustainability of food production practices, company labour standards, company waste reduction and recycling practices, etc. Distributors of locally-grown food will score high marks in such an evaluation system, provided they fulfill these criteria.
 2. **Apply a Phased Approach to Carbon Footprint Calculation** – Given the current challenges of calculating the carbon footprint of food products, and the greater ease of calculating business carbon footprints, a phased approach to carbon footprint calculation is proposed.
 - **Purchasers to Request Carbon Footprint Information in Proposals** - As a first step, institutional purchasers can request information on company carbon footprints from suppliers bidding on food procurement contracts. Points can be given to suppliers who provide this information in evaluation of proposals. This will encourage suppliers to take steps to engage in carbon accounting for their businesses.
 - **Distributors Learn to Calculate their Business Carbon Footprints** – Distributors of locally-grown food can learn to calculate their business carbon footprints as well. The carbon footprint of the Heritage Food Service Co-op, the distribution business affiliated with the Island Good Food Initiative, can be calculated in this manner.
 - **Explore Potential for Research Project** – IGFI and SIPPP can explore the potential for a research project to tackle the development of a carbon *food*printing tool that would enable assessment of the greenhouse gas emissions of local and imported food. This will require resources and research partners. A supplier of imported food will be an essential partner in such a research project. A manageable and meaningful first step toward carbon *food*printing might be to examine the transportation-related emissions of a delivery of imported food and a delivery of locally-grown food to a Vancouver Island institution. If this research attributed significant, verifiable emissions reductions to delivery of local food, then it may be possible to advocate for local food

purchasing as a carbon offsetting strategy for public institutions.

Medium to longer term strategies for the carbon *food*printing project include:

1. **Calculating Producers' Carbon Footprints** – Over time, IGFI could expand its carbon accounting efforts to include the business carbon footprints of local producers, being mindful not to burden producers with additional work without tangible benefits. A partnership with a university instructor and class could be formed to provide students with a community-based research opportunity to perform these footprint calculations. If interest is generated in the academic community, IGFI could also develop a farm carbon footprint research project to investigate other sources and sinks of greenhouse gas emissions at the farm level not captured in the farm business carbon footprint (nitrogen fertilizers, soil carbon sequestration, etc.).
2. **Explore Carbon Offsetting Opportunities** – There has been some discussion among members of IGFI and SIPPP about the potential for Vancouver Island producers to create carbon offsets. Carbon offsets are credits created through a project that results in fewer greenhouse gas emissions than would otherwise occur under a business as usual scenario. These credits are bought and sold by carbon vendors. In this way, the carbon offsetting project receives funding from a carbon vendor. If there is interest, IGFI could initiate a discussion with a local carbon vendor to determine whether there is long term potential to develop a carbon offsetting project with Vancouver Island producers. Potential projects must be large in scale to generate substantial carbon offsets, such that collaboration among multiple Island producers would likely be needed for any viable offsetting project.
3. **Revisit and Revise Strategy** - As carbon accounting methods evolve and databases on carbon emissions from various activities in the food supply chain improve, additional opportunities may emerge for IGFI and SIPPP to benefit from. As elements of this strategy are advanced, the needs and desires of IGFI and SIPPP with respect to carbon *food*printing will need to be re-visited and revised.

Table of Contents

Summary.....	1
Table of Contents	4
Introduction and Purpose.....	1
Feasibility of Carbon Footprint Calculation for Local and Imported Food	3
Carbon Offsetting: Another Potential Application of Carbon Foodprinting	5
Desirability of Carbon Footprint Calculation for Local and Imported Food	7
Strategies.....	9

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Introduction and Purpose

This *Carbon Foodprinting Strategy* has been prepared for the Sustainable Institutional Purchasing Pilot Project of the Island Good Food Initiative, sponsored by the Nanaimo Foodshare Society. The Sustainable Institutional Purchasing Pilot Project (SIPPP) is a community-based research project to assist institutions and producers to work together to increase local purchasing capacity. SIPPP is one of a number of projects coordinated by the Island Good Food Initiative (IGFI), a collaborative of non-profit organizations and businesses working to build a sustainable food system on Vancouver Island and in the coastal region.

Participants in the Institutional Purchasing Conference organized by the Island Good Food Initiative in June, 2008, identified carbon footprinting - or *foodprinting* – as a potentially valuable tool to demonstrate the 'carbon advantage' of local food. Institutional purchasers who are not allowed to privilege 'local' in requests for proposals may give preference to food products with a lower carbon footprint. To build on these opportunities, the workplan developed at this conference included:

1. Developing a carbon *foodprint* accounting system;
2. Developing a research project to support the *foodprint* accounting system;
3. Measuring local food producers' carbon *foodprint* and including this information in marketing materials to assist procurement officers make the case for local food.

There was also interest among SIPPP participants to develop this carbon accounting tool in such a way that it could be used to compare the greenhouse gas emissions from local and imported food products. In addition to these primary goals, the potential for Vancouver Island producers to use carbon footprinting to generate 'carbon offsets' has been discussed among SIPPP partners.

A research paper, entitled *The Food Carbon Story: A background paper on carbon accounting for the food system*, was prepared for the Island Good Food Initiative (IGFI) and the Sustainable Institutional Purchasing Pilot Project (SIPPP) in November, 2008. This report summarized current practices in carbon accounting for the food system. Ideas for moving forward with the carbon footprint project were then discussed at two search meetings held with SIPPP participants.

As a follow-up to these discussions, this *Carbon Foodprinting Strategy* will evaluate the feasibility and desirability of developing and using a carbon *foodprinting* tool to assess and compare the carbon emissions of local and imported food on Vancouver Island. The report will address the following questions:

Feasibility – Is it possible to measure the carbon footprint of local and imported foods on Vancouver Island? How much effort would be required?

Desirability – Will carbon *foodprinting* help the Island Good Food Initiative and Sustainable Institutional Purchasing Project achieve their ultimate goal of increasing the capacity for local food purchasing on Vancouver Island?

Based on this analysis, the report will propose strategies for moving forward with the carbon footprinting project.

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Feasibility of Carbon Footprint Calculation for Local and Imported Food

Two general methods of accounting for carbon emissions are relevant to this discussion -- *product* carbon footprint calculation and *business* carbon footprint calculation. Product carbon footprint calculation aims to tally greenhouse gas emissions generated by a product on its journey throughout the whole supply chain, from the creation of raw materials to the disposal of wastes. Business carbon footprint calculation draws the boundary of analysis around the greenhouse gas emissions generated by the activities of a company, focusing largely on emissions from fuel, vehicle use, employee travel and electricity use. The feasibility of applying each of these methods is discussed in the following paragraphs.

Food Product Carbon Footprint Calculation

The background report prepared in advance of this strategy¹ scanned current carbon accounting practices to identify tools that could be used to calculate greenhouse gas emissions from food products at all stages of the food supply chain, from production through to processing, distribution, consumption and disposal. No carbon accounting tools were found that could be readily applied to calculate the carbon footprint of local *and* imported foods throughout the whole food supply chain. Product carbon footprinting methods designed for this purpose are emerging.² However, these methods are highly labour and information-intensive, and requires participation of many stakeholders and businesses in the food supply chain.

The major constraint to adapting these type of tools for use in BC is the lack of quality data on levels of carbon emissions generated by various activities at the farm level and throughout the food chain. This is particularly true for imported foods, due to the complexity of imported food supply chains and the multiple origins of imported products.

As a result, significant research and investment would be required for the members of the Sustainable Institutional Purchasing Pilot Project to develop and apply a carbon accounting tool to be used by local producers, as well as suppliers of imported food products on Vancouver Island. Financial support and research partners would be required, and suppliers of imported food would need to be engaged as partners in the project.

1 Jacobsen, C. 2008. The Food Carbon Story: A Background Report on Carbon Accounting for the Food System. Prepared for the Nanaimo Foodshare Society.

2 The UK Carbon Trust, Department of Food and Rural Affairs and BSI British Standards recently released the PAS 2050 standard for assessing the life cycle greenhouse gas emissions of goods and services:

<http://www.bsigroup.com/en/Standards-and-Publications/Industry-Sectors/Energy/PAS-2050/>

Food Business Carbon Footprint Calculation

Carbon footprint calculation for businesses is more advanced in BC, with carbon calculation services being offered by various consulting companies. Training in carbon footprint calculation for small to medium sized businesses is also offered through the ClimateSmart program led by EcoTrust and the Pembina Institute.

These tools generally follow the Greenhouse Gas Protocol, an internationally accepted method for calculation of business greenhouse gas emissions, developed by the World Resources Institute and World Business Council for Sustainable Development. This method also forms the basis of an ISO Standard (14064-I) for calculating greenhouse gas emissions at the corporate or organizational level. Businesses and organizations can access online instructions and tools that follow the Greenhouse Gas Protocol to calculate their own business carbon footprint.

It would be feasible and relatively straight forward to use these online business carbon footprinting tools to calculate the carbon footprint of a distribution company supplying local products to public institutions on Vancouver Island. In the case of the Island Good Food Initiative, the footprint of the Heritage Food Service Co-op could be calculated quite readily. A moderate investment of time and resources would be required to record the necessary information on the activities of the Heritage Food Service Co-op and perform the calculations. Participation in an EcoTrust Climate Smart workshop would make this business footprint calculation process quite straight forward.

It would also be feasible for institutional purchasers to request business carbon emissions information from food suppliers through the Request for Proposal process, and to give preference in the proposal evaluation process to those that provide this information. Suppliers of local and imported food would then have the option to learn to calculate their carbon footprints in-house or to contract one of the many companies offering carbon footprint calculation services in BC (if they wished to score points on this category in the proposal evaluation process).

The limitation of business carbon footprint calculation is that it does not provide the information needed to compare carbon emission levels associated with local and imported food products. With information on total company carbon emissions and total product inventory, an average carbon footprint for a given quantity of food could be estimated, but this would only be a rough proxy. On the positive side, business carbon footprint calculation would be a significant first step for companies on the path to assessing and reducing their corporate greenhouse gas emissions.

Carbon Offsetting: Another Potential Application of Carbon *Food*printing

Purchasing Local Food to Offset Carbon Emissions

Institutional purchasers have discussed the possibility of using local, 'lower carbon' food purchasing to offset institutional carbon emissions and to meet provincial requirements for public institutions to become 'carbon neutral' by 2010. At this time, however, emissions embedded in food will not be included in the baseline greenhouse gas balance sheet for public institutions.

To become 'carbon neutral' (having no net greenhouse gas emissions), public institutions will be required to purchase 'carbon offsets' through the Pacific Carbon Trust, a provincially regulated carbon emissions trading body. There is no provision in the draft provincial policy for public institutions to offset their emissions by purchasing lower carbon products.³ However, the provincial offsetting regulations are not finalized yet. There is still time to advocate for alternatives to the requirement for public institutions to purchase all of their carbon offsets from the Pacific Carbon Trust. And, there is an opportunity for public institutions to take the lead and devise mechanisms to include emissions reductions from sustainable food purchasing choices in institutional greenhouse gas accounts.

A “carbon offset” is an emission reduction credit from a project that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur under a business as usual scenario. Carbon offsets are usually measured in tonnes of CO₂ equivalents and are bought and sold by carbon vendors and carbon trading bodies.

The feasibility of using local food purchasing to offset carbon emissions will depend on the ability of institutions to accurately calculate the reduction in carbon emissions achieved by replacing imported food with locally-grown food, using the approaches described in the previous section of this report. Development and use of some form of product carbon footprint calculation tool would be required.

Developing Carbon Offset Projects with Local Producers

An additional application of carbon footprinting that has been discussed by members of SIPPP is the potential for Vancouver Island producers to generate carbon offsets through a project (or projects) that reduce or sequester carbon emissions. One example of a potential topic area that has been discussed is the replacement of fertilizer produced with liquid nitrogen gas (which has a high level of embedded greenhouse gas emissions) by organic fertilizers (lower level of emissions). There may be longer term opportunities to develop and receive funding

³ See BC Ministry of Environment Policy Intentions Paper at www.env.gov.bc.ca/epd/codes/ggrta/offsets_reg.htm

for such a project in partnership with a carbon vendor who would then sell the carbon offsets generated through this project.

The scale of such a project and the market price of carbon emissions will be important considerations in assessing the feasibility of developing a carbon offsetting project in partnership with Vancouver Island producers. At a current price of \$15-25 per tonne of carbon dioxide, projects must capture many tonnes of greenhouse gases to generate any substantial revenue. The emissions reductions and/or storage must also be substantial for a project to be of interest to a carbon vendor. Given the small scale of most Vancouver Island farms, any potential carbon offsetting project is likely to require collaboration among multiple producers. A logical first step in this process would be to initiate discussion with a carbon vendor and assess the potential for developing a viable offsetting project with Island producers.

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Desirability of Carbon Footprint Calculation for Local and Imported Food

With consideration of the opportunities and challenges associated with carbon *footprinting*, the important question is whether the development of a carbon footprinting tool will help the the Island Good Food Initiative and Sustainable Institutional Purchasing Pilot Project further their overarching goal to increase the capacity of public institutions to purchase local food, while at the same time building local production, processing and distribution capacity to meet this demand.

Overcoming Legal Obstacles to Local Food Procurement

If one of the primary goals of carbon *footprinting* for IGFI and SIPPP is to overcome legal barriers to local purchasing by public institutions, then there are alternative mechanisms that can achieve this end with less effort than would be required to develop and apply a carbon accounting tool. Two complementary strategies include using the Request for Proposal process, and applying a 'triple bottom line' evaluation framework to institutional food purchasing decisions.

Using the Request for Proposal Process

A solution to overcoming legal barriers to local purchasing was brought forward by Ken Babich, Director of the Purchasing Services Department at the University of Victoria, at the November 26th meeting of the Sustainable Institutional Purchasing Pilot Project. Request for Proposals for food procurement contracts can include a requirement for the food supplier to provide a specified quantity of locally-grown food. All suppliers bidding on the RFP will be subject to this requirement and will have the opportunity to devise a means to meet this requirement by purchasing from local growers or distributors of locally-grown food. Since all bidders will be subject to this requirement, the RFP process will not give an inherent advantage to local companies and thus will not legal restrictions to privileging local companies.

Institutional purchasing departments can partition a food procurement contract award between two or more companies, if desired. Thus, it will also be possible for suppliers offering *only* locally grown food to be awarded a portion of a food procurement contract awarded through a single Request for Proposal process like the one described above.

Using a 'Triple Bottom Line' Framework to Make Purchasing Decisions

The 'carbon advantage' of local food is only one of many reasons to purchase directly from Vancouver Island farmers. Focusing on a wider range of attributes of locally produced foods may in fact provide a more robust mechanism for purchasers to evaluate food purchases and

overcome restrictions to local procurement.

Institutional purchasers can develop a 'Triple Bottom Line' framework for evaluating food purchases. In addition to greenhouse gas emissions reduction practices, this 'Triple Bottom Line' framework for food purchases could address: freshness and nutritional value; environmentally sustainable and ethical food production practices; fair wages and labour standards for workers; packaging reduction and recycling, etc. Information on company practices related to a range of sustainability criteria can be required in Request for Proposals and purchasers can develop an evaluation matrix and scoring system to assess the performance of bidders against these criteria. Information on company and/or product greenhouse gas emissions can be requested and evaluated as one sustainability criterion through this process.

Assessing and Demonstrating the 'Carbon Advantage' of Local Food

As discussed earlier in this report, significant research would be required to develop and apply a tool to calculate the complete 'farm to plate' carbon footprint of local and imported food products in a manner that is accurate and verifiable. Resources and research partners would be required. Suppliers of imported food would need to be recruited as partners in such a project. Suppliers would need to provide information on energy use at all stages in the pathways by which imported food travels from producers through various warehouses and shipping routes to Vancouver Island. Food products would need to be selected one at a time for footprint analysis. If the true 'farm to plate' footprint were to be calculated, producers would also need to be engaged at the farm level.

An alternative may be to select a smaller component of the food supply chain to examine. For example, a tool could be developed to look solely at the transportation component of food distribution. This tool could compare the carbon footprint of food delivery (by weight of food) from a distributor of locally-grown food (such as the Heritage Food Service Co-op) with long-distance delivery of imported food. Greenhouse gases released in the refrigeration of transported food could be included in this calculation. With the cooperation of a supplier of imported food, data on the transportation modes and pathways of selected food products could be collected and used to calculate this transportation carbon footprint. The results would allow for comparison of greenhouse gas emissions per delivery of a certain weight or volume of locally-grown and imported food. Although this would provide only a slice of the complete carbon footprint, it would still illustrate potential reductions achieved through local purchasing. A sample calculation of the transportation-related carbon emissions savings associated with a hypothetical scenario of locally-grown and imported food is included in Appendix 1 of this report.

Strategies

Based on the previous discussion of the feasibility, desirability and alternatives to developing a carbon *foodprint* calculator, the following paragraphs outline strategies for the IGFI and SIPPP to move forward with this project. Short term and medium to long term strategies are offered.

SHORT TERM

Use Alternative Strategies to Overcome Legal Barriers to Local Purchasing

1. The Request for Proposal Process

As discussed in the previous section, by issuing a Request for Proposal (RFP) containing specification for a certain quantity of locally-grown food, institutional purchasers can overcome barriers to local food procurement. All bidders have equal opportunity to fulfill this requirement of the RFP by purchasing directly from local growers and, therefore, there is no inherent advantage or disadvantage for local companies. This strategy can be used as an alternative to the research and resource-intensive process of attempting to demonstrate the 'carbon advantage' of local food.

2. A 'Triple Bottom Line' Framework for Purchasing Decisions

As an additional component of the Request for Proposal process, a 'Triple Bottom Line' framework can be used by institutional purchasers to make purchasing decisions. Suppliers bidding on food purchasing contracts can be asked to provide information on a range of sustainability criteria related to their products, such as: freshness and nutritional value, ecological sustainability of food production practices, company labour standards, company waste reduction and recycling practices, etc. Distributors of locally-grown food will have an advantage if they fulfill the full range of sustainability criteria requested.

Apply a Phased Approach to Carbon *Foodprint* Calculation

Given the current state of carbon accounting for food products and the considerable level of investment that would be required to develop a carbon *foodprint* calculator tool, a phased approach is advisable.

1. Purchasers Request Carbon Footprint Information in RFPs

As a first step, institutional purchasers could request information on company carbon

emissions in Request for Proposals. At this initial stage, purchasers could ask for information on the company's carbon footprint, since accounting tools and professional support are readily available to perform this type of calculation.

Request for Proposal documents could include language such as: *Preference will be given to suppliers able to demonstrate steps taken to reduce the carbon footprint of their business operations. Provide information on the greenhouse gas emissions generated by your business. Please describe the steps your company has taken or will take to assess and reduce your company carbon footprint.*

Food distributors would then receive points in the contract evaluation process based on the extent of the actions taken to assess and reduce their company carbon footprint.

2. Distributors Learn to Use Existing Business Carbon Footprinting Tools

Members of the IGFI could learn how to use existing business carbon footprint tools to calculate the carbon footprint of their businesses. The footprint of the Heritage Food Service Co-op, which will act as the distributor for local producers, could be calculated in this manner. There are two options for learning how to perform this calculation. One option is to enroll in a Climate Smart workshop, offered by EcoTrust, at a cost of \$1500/two participants. This workshop provides training, access to an easy-to-use web-based carbon calculator tool, and post-workshop staff support.

A second option would be to use the guidance and tools available online through the Greenhouse Gas Protocol, the internationally accepted method for corporate carbon footprint calculation. Learning to use these tools and gathering the required data would also require time and effort. And, it would be advisable to solicit the advice of a qualified professional to verify the results obtained.

Using either of these approaches methods, IGFI can calculate the carbon footprint of the Heritage Food Service Co-op, which will distribute food from local producers to institutional purchasers. Information on the carbon footprint of the Heritage Food Service Coop can then be provided to institutional purchasers, as well as other potential buyers.

Explore Potential for Research Project to Develop Foodprint Calculator

By initiating conversations with potential partners, members of SIPPP can explore the potential to initiate or participate in a research project to develop a calculator tool that will enable comparison of local and imported food, using currently available and attainable data. Potential research partners might include academic researchers, institutional purchasers, and companies or organizations that provide business carbon footprint services. A supplier of imported food will also be an integral partner in such a research project.

As discussed previously in this report, one idea for making such a research project meaningful and manageable is to focus on the transportation sector of the food system. Better data are

available for transportation-related emissions than other stages in the food system. The results of such a research project could allow for comparison of greenhouse gas emissions per delivery of a certain weight or volume of locally-grown and imported food. This information could be used by institutional purchasers to make purchasing decisions. If accurate and verifiable results are achieved, institutions could also use this information to advocate for the inclusion of emissions reductions from sustainable food purchasing in the institutional carbon accounting mandated the Provincial government.

MEDIUM – LONG TERM

Expand Carbon Footprinting to Include Local Producers' Businesses

Over time, the IGFI could work with individual producers to calculate the footprints of their farm businesses with a business carbon footprint calculator. Not all farm-related emissions would be included here (e.g. fertilizers, methane from manure and livestock), but it would be a start. A partnership could be formed with university researchers and students to perform the carbon footprint calculations. However, IGFI and SIPPP should be cautious not to overload producers with additional tasks unless there will be considerable benefits to such work.

There are additional research opportunities related to carbon footprint calculation with local producers. Specifically, there is an opportunity to adapt farm carbon calculator tools that have been developed elsewhere to Vancouver Island. In addition to emissions from fuels, electricity, and vehicle use, these tools also include other sources and sinks of greenhouse gas emissions at the farm level, such as emissions from fertilizer application, livestock enteric fermentation, and manure management, as well as carbon sequestration in soils and woody vegetation. There are significant gaps in scientific data on the levels of emissions generated and captured at the farm level on Vancouver Island and throughout BC. Thus, there are opportunities to make a unique contribution to knowledge on the greenhouse gas balance sheet of Vancouver Island farms. Taking on such a project would require research partnerships and significant resources.

Explore Longer Term Possibilities to Develop Carbon Offset Projects

As discussed previously in this report, there may be longer term opportunities for local producers to develop and receive funding for a project that would reduce or sequester greenhouse gas emissions in their operations. To assess whether such potential exists, SIPPP and IGFI could initiate dialogue on opportunities to develop carbon offset projects with a carbon vendor. A first step will be to determine whether there are any projects where the potential emissions offsets reductions would be great enough to warrant development of such a project.

Evaluate and Revise Results of Carbon Foodprinting Strategy

This Carbon *Food*printing Strategy is based on an analysis of currently feasible and desirable directions for IGFI and SIPPP, within the context of the overarching goals of each of these initiatives. As carbon accounting methods evolve and databases on carbon emissions from various activities in the food supply chain improve, additional opportunities may emerge. As elements of this strategy are advanced, the needs and desires of IGFI and SIPPP with respect to carbon *food*printing will also need to be re-visited and revised.

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Appendix 1. Sample Calculation of Transportation-Related Emissions of Local and Imported Food

The following simplified, hypothetical scenario gives some indication of the potential greenhouse gas emissions reductions from local food purchasing, if we consider only the transportation sector.

Scenario:

A medium-sized truck delivers a full load of imported produce directly from a warehouse in central California to the University of Victoria, a distance of 2000 km. Another medium-sized truck delivers a full load of Vancouver Island produce from a distribution centre in Nanaimo to the University of Victoria, a distance of 125 km.

Transport Canada defines a medium sized truck as one with a gross vehicle weight of at least 4.5 tonnes and less than 15 tonnes. The average fuel efficiency of medium-sized diesel trucks in BC is reported to be 35.1 L/100 km.⁴ Environment Canada reports the emission factor (the rate at which emissions are generated) through mobile combustion of diesel to be 2.730 kg CO₂ /L fuel.

The emissions of each delivery can be calculated using the following equation:

$$\text{CO}_2 \text{ Emissions Per Delivery} = \text{Vehicle Fuel Efficiency (L/100 km)} \times \text{Distance Travelled (km)} \times \text{Emission Factor (kg/L)}$$

Or,

CO₂ Emissions Per Delivery Imported Food

$$= 35.1 \text{ L/100km} \times 2000 \text{ km} \times 2.730 \text{ kg CO}_2/\text{L fuel} = 1917 \text{ kg CO}_2 = \mathbf{1.9 \text{ tonnes CO}_2}$$

CO₂ Emissions Per Delivery Local Food

$$= 35.1 \text{ L/100km} \times 125 \text{ km} \times 2.730 \text{ kg CO}_2/\text{L fuel} = 120 \text{ kg CO}_2 = \mathbf{0.12 \text{ tonnes CO}_2}$$

Each delivery of local food therefore saves 1.78 tonnes CO₂

This example assumes an arbitrary distance of 2000 km from a fictional warehouse in California and assumes that all products in a delivery truck destined for UVic originate from this warehouse. Emissions from the BC Ferries trip between Tsawassen and Swartz bay have also been omitted. Fuel efficiency figures for BC trucks are used for the US-origin vehicle. This oversimplification of the pathways by which imported food likely arrives on Vancouver Island and the relevant data is intended for illustration purposes only.

⁴ Statistics Canada. 2005. Canadian Vehicle Survey 2005, Summary Report. Available online at <http://oee.nrcan.gc.ca/Publications/statistics/cvs05/index.cfm?attr=0>