





UBC Botanical Garden



A Regional Framework for Nature-based Solutions on BC's South Coast

# Incentives – Carbon

Compiled Interview Results

Compiled by Lyndsey Smith February 2023

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# **Executive Summary**

The Coastal Douglas-fir Conservation Partnership (CDFCP) secured funding in 2022 from the federal governments Nature Smart Climate Solutions Fund (NSCSF) to develop a regional framework of policies, decision-support tools and incentives for nature-based solutions to climate change and biodiversity loss that could be implemented by local government and First Nations in south-west British Columbia (BC).

The first phase of the project was to undertake interviews with local government and First Nations representatives (end users) and technical specialists to understand current opportunities and gaps in the resources currently available to local governments, First Nations and ENGOS in relation to;

- climate change mitigation (carbon storage and sequestration),
- climate change adaptation (watershed and wildfire resilience),
- biodiversity conservation,
- culturally important ecosystems (i.e. habitats that support plants and animals important to indigenous communities).

The CDFCP partnered with UBC Botanical Gardens for the delivery of this project as the Garden has secured funding to undertake Climate Adaptation Planning and produce a Biodiversity Atlas. It was identified that many of our collective objectives aligned and that we could deliver more for the natural environment working in partnership.

The focus of this report is on climate change mitigation, specifically changing forest management practices to store and sequester carbon. Interviewees included representatives from carbon developers, foresters, provincial and federal government and ENGOs.

This report should be read in conjunction with a supporting document titled: Incentives – Carbon; Raw Interview Results. This supporting document contains the direct comments made by each of the interviewees and can be cross-referenced to this report.

**Table 1** presents a summary of the issues and opportunities highlighted by interviewees and recommendations that respond to the gaps in policy, tools and incentives identified.

**Please note** the comments summarised in this report and within the raw interview results document are the thoughts and opinions of interviewees and may not reflect the thoughts and opinions of the CDFCP.

Theme	Issues and Opportunities	Summary Recommendations
Carbon Offsetting- Legislation and Policy	<ul> <li>General Carbon Offsetting Policy         <ul> <li>Legislation and policy relevant to the reduction of greenhouse gas emissions is complex and continuing to evolve.</li> </ul> </li> <li>Atmospheric Sharing Agreements         <ul> <li>Policy indicating how Atmospheric Sharing Agreements can be obtained needs to be produced by the Ministry of Forests.</li> </ul> </li> <li>Indigenous Protected Conservation Areas (IPCAs)         <ul> <li>Federal and provincial policies need to align to enable IPCA to enter carbon projects.</li> </ul> </li> </ul>	<ul> <li>Identify opportunities to feed into Forest Landscape Planning tables and the Modernised Land Use Planning tables.</li> <li>Work with the Ministry of Forests to develop a process for First Nations to enter into an Atmospheric Sharing Agreement with the Province.</li> <li>Work with the federal and provincial government to develop guidance for First Nations on the formation IPCA that still allow them to access the carbon market.</li> </ul>
Setting up a Carbon Project	<ul> <li>Determining if a Project is Viable <ul> <li>To determine if a landowner has a viable carbon project an initial assessment is completed.</li> </ul> </li> <li>Carbon Inventory and Monitoring <ul> <li>Remote sensing to quantify carbon is still in development and most protocols require on the ground quantification of biomass / carbon.</li> </ul> </li> <li>Challenges to Setting up a Carbon Project <ul> <li>Lack of information relating to carbon offsetting is a limiting factor to landowners entering a scheme.</li> <li>Carbon offsetting projects are complex and expensive as they require the appointment of carbon developers and marketing consultants.</li> <li>The initial costs of starting a carbon project can be covered by a lump sum of back dated credits received when a project is verified. The start point of a scheme is when a proponent starts working towards verification rather than the point of verification.</li> <li>The duration (1, 30 or 100 years) of a carbon project selected is influenced by the type of landholding.</li> <li>Carbon developers are concerned that carbon offsetting schemes that require short term commitments will undermine the industry e.g. one year.</li> <li>Small landowners may prefer to enter an Improved Forest Management carbon project rather than Avoided Deforestation to provide them with the option to generate harvesting income.</li> </ul> </li> <li>Aggregate / Group Projects <ul> <li>Group / aggregate projects can reduce the cost for new landowners entering a carbon project.</li> </ul> </li> </ul>	<ul> <li>Establish a page on the CDFCP website that provides simple guidance on how carbon offsetting project work and can be formed, pulling on existing documentation.</li> <li>Undertake a business case for an aggregate forest carbon offset project around the Salish Sea that is focused on reducing start up and management costs for small landowners.</li> </ul>

**Table 1.** Summary of issues and opportunities identified by interviewees and recommendations developed in response to identified gaps.

Theme	Issues and Opportunities	Summary Recommendations
	<ul> <li>The standardisation of Forest Management Plans is unlikely to reduce costs when setting up an aggregate carbon project as each site is different.</li> <li>The effect of landowners leaving a Plan Vivo group afforestation scheme is managed through the identification of new landowners.</li> </ul>	
	<ul> <li>Project Viability - Credit Deductions <ul> <li>The funds placed into a buffer pool can be significant for a project, but some standards allow funds to be returned.</li> <li>Leakage (emissions move elsewhere) calculations are not standardised and can significantly impact on the viability of a project.</li> </ul> </li> <li>Project Viability – Tests to Meet <ul> <li>Projects need to demonstrate that they have the right to sell the carbon stored and sequestered on a parcel of land.</li> <li>Projects need to be able to demonstrate additionality (forest could be felled) to enter a carbon offsetting project.</li> <li>Permanence (carbon removed is not released back to the atmosphere) is demonstrated through contract rather than a legal mechanism such as a covenant.</li> </ul> </li> <li>Project Viability – Indigenous Consultation <ul> <li>First Nation consultation should be undertaken during the establishment of</li> </ul> </li> </ul>	
Carbon Market	<ul> <li>Carbon Pricing <ul> <li>Co-benefits can increase the value gained from the sale of a carbon credit.</li> <li>The quantification of biodiversity gains delivered by land management practices is difficult to quantify and open to challenge compared to carbon.</li> <li>The standard followed and marketing effort will affect whether a carbon credit sells.</li> <li>Landowners are monitoring the carbon market waiting for the price to reach a point where there is a financial incentive (versus timber extraction).</li> <li>It is anticipated that the scale of the voluntary and compliance market will continue to increase as will the price of carbon.</li> <li>Stacking of financial tools can make an unviable carbon project viable.</li> <li>The economics of afforestation projects can be cost prohibitive because carbon sequestration is lower than losses until 15-20 year post planting, which means credits are not gained until that point.</li> </ul> </li> </ul>	<ul> <li>Promote the inclusion of Sustainable Development Standard (SD Label) and a Climate, Community and Biodiversity Standard (CCBA Label) in FCOP.</li> <li>Continue to support the Climate Action Secretariate in the development and implementation of FCOP.</li> <li>Seek to support the province in an incentives scheme for private landowners that would protect carbon stores, biodiversity, hydrology and cultural value.</li> </ul>

Issues and Opportunities	Summary Recommendations
<ul> <li>Selling credits locally realises the principals of circular economy.</li> </ul>	
Compliance and Voluntary Market	
Prescriptive methodologies can be advantageous as they make verification	
and additing easier.	
The compliance market in British Columbia is still in development through     the Eorest Carbon Offset Protocol (ECOP)	
A notential benefit of the draft ECOP is that it includes multiple	
methodologies e.g. afforestation, improved forest management and avoided	
deforestation.	
• A lack of consistency between protocols could hinder the market in the	
future as it could limit where credits can be sold.	
<ul> <li>High quality standards / protocols lead to a better price and avoid</li> </ul>	
controversy.	
<ul> <li>International models with lower entry requirements could lead to more</li> </ul>	
landowners entering carbon offsetting schemes.	
<ul> <li>A perverse outcome of carbon offsetting could be market leakage. If timber</li> </ul>	<ul> <li>Highlight existing documents that discuss</li> </ul>
extraction reduces / stops in BC enhancing demand for logging in the	misconceptions about the negative effects of the
Amazon and China.	implementing carbon offsetting schemes.
Reducing active forestry reduce the carbon sink strength of BC forests and	
increase the risk of fire and pests.	
I he establishment of carbon offsetting projects could have an impact on jobs     within the local area	
Active management is permitted under a carbon offsetting scheme, but it	
can be difficult to quantify the effect on carbon	
<ul> <li>Carbon offsetting can be viewed as green washing that organisations use to</li> </ul>	
prevent making real reductions in emissions.	
Wildfire Restoration and Climate Change Resilience	Work with local governments to achieve the protection
• Forest restoration after fire is being delivered by the provincial government	of significant carbon stores through land purchase and
as a nature-based solutions to climate change inc. 2 Billion Trees, Forest	other financial incentives for private landowners.
Carbon Initiative.	<ul> <li>Develop a methodology for local governments, with</li> </ul>
Local Governments Protecting Local Ecosystem Services	partners, to quantify above ground carbon and track
Land Trust or similar can protect ecosystems services with local government	change as a result of their planning decisions.
through land purchase or other agreements / incentives.	Map the extent of forest plots and see if these provide
Carbon Mapping, Modelling and Tracking by Local Governments	an unbiased sample of the forest within the CDFCP interest area.
	<ul> <li>Issues and Opportunities</li> <li>Selling credits locally realises the principals of circular economy.</li> <li>Compliance and Voluntary Market         <ul> <li>Prescriptive methodologies can be advantageous as they make verification and auditing easier.</li> <li>The compliance market in British Columbia is still in development through the Forest Carbon Offset Protocol (FCOP).</li> <li>A potential benefit of the draft FCOP is that it includes multiple methodologies e.g. afforestation, improved forest management and avoided deforestation.</li> <li>A lack of consistency between protocols could hinder the market in the future as it could limit where credits can be sold.</li> <li>High quality standards / protocols lead to a better price and avoid controversy.</li> <li>International models with lower entry requirements could lead to more landowners entering carbon offsetting schemes.</li> <li>A perverse outcome of carbon offsetting could be market leakage. If timber extraction reduces / stops in BC enhancing demand for logging in the Amazon and China.</li> <li>Reducing active forestry reduce the carbon sink strength of BC forests and increase the risk of fire and pests.</li> <li>The establishment of carbon offsetting projects could have an impact on jobs within the local area.</li> <li>Active management is permitted under a carbon offsetting scheme, but it can be difficult to quantify the effect on carbon.</li> <li>Carbon offsetting can be viewed as green washing that organisations use to prevent making real reductions in emissions.</li> </ul> </li> <li>Wildfire Restoration and Climate Change Resilience</li> <li>Forest restoration after fire is being delivered by the provincial government as a nature-based solutions to climate change inc. 2 Billion Trees, Forest Carbon Initiative.</li> <li>Local Governments Protecting Local Ecosystem Services</li></ul>

Theme	Issues and Opportunities	Summary Recommendations
	<ul> <li>Carbon mapping should be produced for decision makers to consider how</li> </ul>	• Seek to form an aggregate of partners to access the 2
	their policy decision will affect carbon stores.	Billion Trees Fund.
	<ul> <li>Methodologies for quantifying land-based carbon for local governments are</li> </ul>	<ul> <li>Seek to support the province in an incentives scheme</li> </ul>
	not clear.	for private landowners that would protect carbon
	<ul> <li>Carbon plots are biased as they will be undertaken where the licensees are</li> </ul>	stores, biodiversity, hydrology and cultural value.
	operating and are consequently of low value to local governments.	
	<ul> <li>Decision support tools are being developed by the province for forest</li> </ul>	
	management.	
	<ul> <li>Modelling and tracking of carbon emissions is a new science and there isn't</li> </ul>	
	consensus on approach.	
	<ul> <li>Remote sensing is being used by conservation organisations in the US to</li> </ul>	
	monitor compliance with conservation easement requirements.	
	<ul> <li>Artificial Intelligence (AI) is being used to track land use change from satellite</li> </ul>	
	imagery, but there is still the need for human review.	
	Urban Cooling	
	<ul> <li>Urban tree cover is not only about carbon storage it is also important for</li> </ul>	
	urban cooling with climate change.	
	Incentives	
	<ul> <li>The short-term nature of funding for the delivery of nature-based solutions</li> </ul>	
	has a negative effect as monitoring and maintenance is never included.	
	We need to increase financial incentives for private landowners to encourage	
	protection of carbon stores outside of the carbon market.	
	<ul> <li>Working forest conservation easements developed in the US could be an</li> </ul>	
	example of how incentives could be developed in Canada.	
	Reducing Emissions from Burning of Harvest Residues	
	Burning of harvest residues is leading to a significant release of carbon that	
	could be avoided.	
Watershed	Ownership of drinking water watersheds should move from private managed	Promote investment by local governments in the
Resilience	forest lands into public ownership to ensure all associated natural assets are	protection of significant carbon stores through land
	protected.	purchase and other financial incentives for private
		landowners.

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### 1 Introduction

#### 1.1 Background

The Coastal Douglas-fir Conservation Partnership (CDFCP) secured funding in 2022 from the federal governments Nature Smart Climate Solutions Fund (NSCSF) to develop a regional framework of policies, decision-support tools and incentives for the protection and restoration of nature-based solutions to climate change and biodiversity loss that could be implemented by local government and First Nations in south-west BC (Figure 1).

The intent is to develop the framework through a collaborative process to ensure that the resources produced are of value to the end users and to maximise the efforts of multiple organisations working within the same area (climate change resilience).



**Figure 1**. Primary study area outlined in red (Georgia Basin's dry lowlands – CDF and associated ecosystems), and secondary study area outlined in blue (lowlands and adjacent uplands combined).

The first phase of the project involved interviewing key stakeholders to help understand where there are gaps and opportunities in the policy and decision-support<sup>1</sup> resources currently available to local governments, First Nations and ENGOS in relation to:

<sup>&</sup>lt;sup>1</sup> Examples might include: maps, models, incentives, decision trees, protocols, policy statements, guidance documents, evaluation frameworks, etc.

- climate change mitigation (carbon storage and sequestration),
- climate change adaptation (watershed and wildfire resilience),
- biodiversity conservation,
- culturally important ecosystems (i.e. habitats that support plants and animals important to indigenous communities).

The interviews have been grouped either by end users or in relation to specific topic areas:

- Policy, Tools and Incentives Local Government Perspective
- Policy, Tools and Incentives First Nations Perspective
- Spatial data review (Biodiversity Mapping)
- Incentives Carbon

The CDFCP partnered with UBC Botanical Gardens in 2022 for the delivery of this project as the Gardens have secured funding to undertake Climate Adaptation Planning and to produce a Biodiversity Atlas. It was identified that many of our collective objectives aligned and that we could deliver more working in partnership.

#### 1.2 Purpose of this Report

This report presents a summary of interviews undertaken with carbon developers, foresters, provincial and federal government and ENGOs. The conversation during the interviews was focused on forest carbon and the policy, tools and incentives that are available to private landowners, local government and First Nations to encourage the protection and restoration of forested ecosystems as a nature based solution to climate change and biodiversity loss.

The report is broken down into the following topic areas;

- Carbon offsetting Legislation and Policy
- Setting up a Carbon Project
- Carbon Markets
- Potential Negative Outcomes of Carbon Offsetting
- Other Drivers for Carbon Storage
- Watershed Resilience

For each topic area the issues and opportunities highlighted by the interviewees are presented followed by relevant recommendations.

This report should be read in conjunction with a supporting document titled: Incentives – Carbon; Raw Interview Results. This supporting document contains the direct comments made by each of the interviewees and can be cross-referenced to this report.

### 2 Carbon offsetting – Legislation and Policy

#### 2.1 Issues and Opportunities

#### 2.1.1 General Carbon Offsetting Policy

- a) Legislation and policy relevant to the reduction of greenhouse gas emissions is complex and continuing to evolve.
  - The BC Greenhouse Gas Emission Control Regulation (GGECR) establishes the BC Carbon Registry and the protocols for a carbon offset project.
  - The GGECR is empowered by the Greenhouse Gas Industrial Reporting and Control Act, which sets out a larger GHG emissions reductions framework that includes offsets.
  - Industries that exceed their cap on emissions must use BC approved carbon offset protocols. However, at present the only operations that have a cap are Liquid Natural Gas (LNG) operations that emit more than 10,000 tons of CO<sub>2</sub> equivalent per year. No operation in BC meets this cap. BC is reviewing that legislation in light of more stringent emission reduction targets for industry.
  - The largest purchaser of FCOP (v1) carbon offsets is the province to achieve compliance with the Governments Carbon Neutral Regulation.
  - In 2010 the Government of BC committed to offset all of the emissions from the public service and public service organizations. These must be bought from the compliance sector and the current supply of units have been generated by schemes under FCOP v1.
  - The importance of carbon storage and sequestration could be expressed in Forest Policy as it is modernised.
  - Forest management takes into consideration 10-11 values: timber value, wildlife, water soil etc. Carbon should not be made one of these values it should be a lens at which you make decisions. What we're trying to create are resilient ecosystems that aren't going to succumb to catastrophic wildfire or bugs. For example, if you have green forests that are alive for longer you have met your carbon objective.
  - If fertilisation is used to increase tree growth rate and sequestration of carbon. Policy needs to be established to retain these trees for their normal rotation rather than cutting them sooner because they grow faster.
  - The Forest Landscape Planning Tables are where decisions are made on what the community wants the landscape to look like. They will inform the Chief Forester where they would like to undertake timber extraction, protect the natural environment and store carbon.
  - We need to manage the forests so that they are sinks not sources. We want the forests to store more carbon than they emit. That is all the policy direction that is needed.
  - The Carbon Offset Regulation being produced by the Federal Government is a key policy document as it sets out what compliance grade carbon offset credits in Canada will be.
  - The federal government indicated to the provinces and territories that they either comply with the federal offset system or they develop a system that is equivalent to or better. Various provinces and territories, including BC, have developed their own systems, their own carbon levies, fuel prices and offset systems.
  - The BC Forest Carbon Offset Protocol Version 2 is in draft format and will be an important document.

- The development of Federal and Provincial tools linked to carbon creates a complicated system that would not make a lot of sense unless you are fully embedded in it.
- The province is working on the implementation of the Old Growth Strategic Review, its not policy, but it's a response to policy.
- UN Declaration on the Rights of Indigenous Peoples (UNDRIP) is important in relation to the Old Growth Strategic Review and carbon.
- FCOP does not take into consideration soil carbon properly. It takes into consideration the top 20 cm but in some wetland forests it can be 5-7 m deep. The methodology for soil carbon should be adjusted for different vegetation communities.

#### 2.1.2 Atmospheric Sharing Agreement

- a) Policy indicating how Atmospheric Sharing Agreement can be obtained needs to be produced by the Ministry of Forests
  - Treasury Board Directive 2/15 governs how property rights of any sort of carbon offset generated on Crown Land are disposed of. The outputs of that in the past have been Atmospheric Benefit Sharing Agreements between the government and First Nations. This defines who gets a share of the carbon credits generated.
  - There is interest in how carbon projects could be developed on Crown Land and First Nations will be important in achieving this.
  - An Atmospheric Benefits Sharing Agreement relates only to atmospheric benefits, it does not give control of the actual timber.
  - The government requires that carbon projects on crown land must be delivered in accordance with the Emissions Offsets Regulations (EOR) and therefore FCOP.
  - There is currently no active guidance document available to illustrate how a First Nation (or other entity) could enter into an Atmospheric Sharing Agreement with the government.
  - The Ministry of the Environment produces our legislative framework for offsets and carbon. Climate Action Secretariate (CAS) produces the carbon offset protocols. The Ministry of Forests would establish an Atmospheric Sharing Agreement with a First Nation. If the First Nation is in a formal reconciliation process the Ministry of Indigenous Relations and Reconciliation would be involved in the Atmospheric Sharing Agreement discussion.
  - If a First Nation is a formal reconciliation process, they would sign an Indigenous Atmospheric Benefits Agreement, if not it would be an Atmospheric Benefits Agreement.
  - On public land, a proponent would need to a) demonstrate that they have the property rights from all of other entities that would otherwise have a claim to those rights and b) if they can demonstrate that there is long term access to the land for the purposes of monitoring, to enter into an Atmospheric Benefits Agreement.
  - The Atmospheric Benefits Agreement process is not defined / documented, but the Ministry of Forests are likely to undertake a strength of claim test. If two First Nations had a claim but only one wanted to pursue a carbon project, then the Ministry may hold a larger share of the credits in case the second First Nation decided they were interested.

- The Blueberry Nation Decision is influencing how the province is operating. This has led to a review of land held by significant licensees with a view of transferring it to First Nations.
- There are a lot of stakeholders involved in the management of public lands; timber licence holders, forest management companies, provincial government, indigenous communities, oil and gas leases etc. To deliver a carbon project it is difficult to identify who should be compensated. It is a complex co-management issue.
- Coast Nations have been successful in developing Atmospheric Benefits Agreements with the province of BC, but to scale that up you would need to look at co-management and establish a mechanism for those parties to engage with no conflicts of interest.
- Policy is needed on how the province will balance annual allowable cuts with conserving forests for carbon and climate mitigation.
- The Improved Forest Management Protocol being developed by the federal government is a protocol for private lands. Private land in Canada is minimal. The protocol is leaving it to the private landowner to engage with their indigenous neighbours to establish safeguards for the project and enable indigenous knowledge to be incorporated. However, First Nations want a protocol to enable them to lead their own projects.
- The forest industry has a strong influence on the province and forest management.
   Indigenous communities are interested in carbon offsetting, but they are reliant on the province wanting to engage in the discussion.
- The absence of clear guidance on how to establish an Atmospheric Benefits Agreement is a massive issue for First Nations. The Great Bear Rainforest was a great project, but little has happened since then.
- Could the Federal Government provide an incentive to the province to encourage the establishment of Atmospheric Benefits Sharing Agreements with the aim of meeting climate targets, similar to their response to the Canadian Output Based Pricing System (OBPS)?
- In the absence of policy, it took 5 years to get an Atmospheric Sharing Agreement in place.
- There needs to be a clear and transparent policy for Atmospheric Sharing Agreements. It is a secondary agreement for First Nations, after a reconciliation agreement, so there are a lot of hoops to jump through.

#### 2.1.3 Indigenous Protected Conservation Areas (IPCA)

- a) Federal and provincial government need to ensure that legislation and/or policy does not prevent indigenous people from accessing carbon offsetting in areas identified as IPCAs
  - Conflicting / unclear policy (ECCC) means that it is unclear as to whether establishing an IPCA could prevent indigenous communities entering into a carbon offsetting scheme with the intent of using that funding to enable management of the land.
  - Indigenous peoples are looking to undertake active management of the land within IPCAs. These activities could result in more carbon being stored in the landscape compared to traditional conservation approaches.
  - There are indigenous communities that are not applying to establish IPCA's because they would prefer to use other financial mechanisms to support their future.

- We consider that there is more flexibility with an IPCA than a full conservation easement because traditionally First Nations have undertaken harvesting, leading to the argument around not harvesting and getting carbon credit for it (additionality).
- There is a lot of confusion around forest carbon protocols in Canada at the moment. By staying in the voluntary market, we are hoping this allows flexibility for IPCAs and carbon.
- The origins of establishing an IPCA began in Haida Gwaii, Tsilhqo'tin and Haisla territories in the late 80s and early 90s. Those communities created the protoypes for an agreement where they've agreed to disagree on sovereignty so none of their rights or title are put at risk while they move ahead on a management agreement.

#### 2.2 Recommendations

- a) Identify opportunities to feed into Forest Landscape Planning tables and the Modernised Land Use Planning tables.
- b) Work with the Ministry of Forests to develop a process for First Nations to enter into an Atmospheric Sharing Agreement with the Province.
- c) Work with the federal and provincial government to develop guidance for First Nations on the formation IPCA that still allow them to access the carbon market.

### 3 Setting up a Carbon Project

#### 3.1 Issues and Opportunities

#### 3.1.1 Determining if a Project is Viable

- a) To determine if a landowner has a viable carbon project an initial assessment is completed.
  - We need spatial data; landownership boundary and proof of ownership or to sell carbon. We need forest inventory data; type of trees, maturity, species, management regime (harvesting or not, intensity). Identify any encumbrances on the property e.g. covenants. If there was an easement that prohibited harvesting the project would have no additionality claim.
  - Information we ask for is forest inventory, boundary data and a Forest Management Plan to determine an estimate for the carbon credits that could be generated. The more information that is available the more accurate the model calculating credits. This would enable an initial assessment but would not be enough information to enter into a carbon project.
  - To gain sufficient information to enter into a carbon project a field visit to quantify carbon is required; measuring every tree in a plot, height, growth rate etc.

#### 3.1.2 Carbon Inventory and Monitoring

- a) Remote sensing to quantify carbon is still in development and most protocols require on the ground quantification of biomass / carbon.
  - Licensees have LiDAR which gives you a sense of tree heights. This could be used as a proxy for biodiversity or to identify stands with high levels of carbon. This could be used to update the Vegetation Resource Inventory, maybe.
  - I think there is an opportunity for broad scale LiDAR data collection, forest inventory data is very useful in that context.

- Remote sensing is beneficial for looking at dramatic changes like cut blocks and fire, but its use for estimates of biomass is still fraught with problems.
- You can draw information on biomass from the Vegetation Resource Inventory, meaning you don't need boots on the ground as someone else has done that work for you.
- Plan Vivo uses a combination of field monitoring and remote sensing. Field monitoring is still required as it is hard to train a remote sensing algorithm for small scales. I am hearing the carbon industry is trying to move to remote sensing only. This tends to be better for avoided deforestation projects. I talked to a company that was combining ground-based LiDAR drones and remote sensing, which they claim is more effective than ground based monitoring.
- The data needed for a carbon project can not necessarily be pulled straight out of your LiDAR dataset. We haven't used LiDAR a lot in our carbon project. LiDAR is getting better, allowing you to identify species. Monitoring is a mix of traditional inventory sampling and remote sensing. Some landowners are capturing inventory data with drones, but it is not suitable for our scale of work (too large).
- LiDAR provides more operational information, detailed terrain stability, tree heights etc.
   LiDAR doesn't reduce the costs of a carbon projects because of the on the ground plots you need.
- LiDAR is a game changer for forest professionals but from a carbon perspective it can't get individual trees yet and the information you need to model below ground biomass.
   You need to make assumptions to calculate below ground biomass.
- The protocol NCX uses exclusively remote imaging, no boots on the ground.
- The protocols currently require a manual method to quantify carbon, but remote sensing technology is developing quickly. If you could gel the two approaches together so that they become more efficient and accurate costs may come down increasing participation.
- I think there are still opportunities to improve the efficiency and accuracy of the assessment pre-contract, using technology. There is no protocol telling us we can't use satellite imagery and LiDAR for the initial assessment. I think that is where the opportunity lies for landowners.

#### 3.1.3 Challenges to Setting up a Carbon Project

- a) Lack of information relating to the carbon offsetting is a limiting factor to landowners entering a scheme.
  - When you're engaging with landowners there's a massive educational component because they just don't know anything. It's hard to get good information on what's a carbon credit, how does the market work, all the questions you're asking me are questions that come about because there are no easy answers.
  - Forest carbon modelling is very complex and specialised. A simple carbon calculator for the Forest Carbon Offset Protocol (FCOP) project proponents to assess the potential increase in carbon removals in their land base could be very helpful. It won't provide the same level of certainty as the models required by the protocol, but it would provide a good range, and potential yield of carbon offset units. This would enable to project proponent to do a cost benefit assessment.
  - I think giving broad monetary valuations is not effective and people can get fixated on a number. Protocols are complex and it is not easy to quantify the carbon gains.
  - Ninety percent of my job is education as it is difficult for a landowner to understand how to manage their land differently to enter the carbon market. The Alberta Ecotrust has developed a series of guidance documents that walk people through a carbon project.
- b) Carbon offsetting project are complex and expensive as they often require the appointment of carbon developers and marketing consultants.
  - An independent consultant was appointed as our implementation partner. They have deep expertise in carbon offsetting. There is an immeasurable amount of paperwork involved with these processes [carbon offsetting], so our consultant does a lot of that for us. We have also appointed a marketing consultant so that once we go through the auditing and verification process, they will take our carbon offsets to market, and bring us prospective buyers. This just shows how complex it is. How big of a deal it's been to get this up and running. It's been a monumental effort for sure.
  - The initial costs seem high. They are certainly prohibitive if the land base is too small.
     You just can't make the economics work. But for larger land areas the economics over time certainly pays off.
  - I think a Plan Vivo Project costs between \$10 50,000. Why is it so expensive? There needs to be a planting design, the modeling of the carbon. A social and economic baseline needs to be created. There needs to be plans implemented for the annual cycle, which is seeds, to planting, to monitoring. There's the carbon modeling piece that must be done. Then you must send it to a Validation Review Board. They review it. The certification has costs too. So, it's expensive.
  - [how could you reduce the costs of entering into a carbon offsetting scheme for small landowners] The US Forest Service has a report that includes a lot of tables. So instead of everybody having to do their own quantification of carbon you can use these lookup tables. Alternatively, someone could build a system that uses all the models in a web interface where you upload your forest inventory, your harvest schedules, fertilization etc. and run it to calculate carbon.

- [what are the barriers to establishing a carbon offsetting project?] I would think it's capital costs to get a project going and that it is a new and emerging market compared to the traditional timber market. Also, the requirements of inventory and other things that you need to know about your land base to generate the offsets. There's also the need for continual monitoring and maintenance for a project.
- When you think about those specific costs, how could you control them? Some of them are fixed and are going up. When you think about labour, professional services and audit services those are external costs. You can't control them.
- I think the gaps right now are in operational knowledge and understanding. I'm lucky because I have been through a carbon project. It's really complex, the whole process of putting a carbon project together. It's not necessarily intuitive so I think in terms of using the carbon offset market as a tool on a broad scale we probably need a lot more education, knowledge transfer in the conservation, land trust sector and government agencies.
- I don't think people understand carbon at all. Probably half a dozen people in Canada really understand carbon accounting and the cost of managing the carbon sinks.
- Carbon offsets are like computers. No one knows how they work. You don't need to know how they work if you've got the correct infrastructure support, and they become part of what we do.
- It is not just a one-time transaction. This is a 100-year commitment to be monitoring, to be verifying every 5 years, and to be continually marketing and selling credits. I think that we want to look at the true cost over time.
- c) The initial costs of starting a carbon project can be covered by a lump sum of back dated credits received when a project is verified. The start point of a scheme is when a proponent starts working towards verification rather than the point of verification.
  - I would suggest that it has been a year and a half to two years [to set up]. This project has a 30-year duration it's 26 years forward, because of back dating.
  - If a conservation group buys a piece of land in 2022 and specifies that we are going to make this purchase because our goal is to create a carbon credit project. Now, two years go by, and you raise the capital to do that, and you bring the project into play in 2024 you can back date that carbon project to 2022. The reason that you can do that is the rules state that if your activity is designed to change the way the land is managed, and if it's for carbon credit reasons, to benefit the atmosphere. They will give you credit for that.
  - If part of your project is avoiding harvesting, you can think of the two years' worth of avoided harvest as a credit tranche that you get right at the beginning of the project.
- d) The duration (1, 30 or 100 years) of a carbon project selected is influenced by the type of landholding.
  - We are privately owned so we are not subject to short term decision making. The investment is intended to be long term with consistent returns. So, that's good from a forest management perspective as well as a carbon perspective. Our initial carbon project was a 100-year project. This project has a 30-year duration. On the voluntary

market 30 years is almost as long as you can get. If you think about commercial contracts, which is essentially what the voluntary market is, that is quite a long duration, and the market views it as such which is why it's considered to be of the highest quality.

- A 100 years from a project developers' perspective is an awfully long time to try to ensure or guarantee emission reductions. I don't know how that would be enforced and maintained over time. I'm just not sure it's practical and for some project developers, for investment people in particular, a 100-year time horizon is just beyond comprehension. That's a barrier to project implementation.
- Coming back to my original point about the race to the top in terms of standards and quality. I don't think that 30 or 40 years is going to cut it now. It's interesting because trees do burn and there are pests, and so there are risks but I think the intent of the methodology is to manage those risks and to have safeguards in place that make sure that a ton [of carbon] is a ton [of carbon]. I think right now the global offset community has established 100 years as permanent.
- I think there is a portion of people that will understand and accept it [100 years]. There are some that don't accept it, there are some groups that have governance structures that can't accept it because they can't commit to these liabilities, potentially for future councils or future generations.
- I think we're seeing people move towards voluntary markets because of the lower commitment. On the flip side of the problem, carbon pricing in the compliance markets is higher so the value coming from a project is higher, but you need to be willing to commit much longer.
- We may be an outlier. We're comfortable with perpetuity. The idea that we got into this business 30 some years ago, doing perpetual conservation easements, doing long term carbon agreements is not problem whatsoever. Think about how carbon credits work. We get a chunk of money in the first issuance and then it's an annuity.
- Like you say there's everywhere from one to 100 years. Carbon's hard to prove and the sector is evolving. The forestry carbon market is the most well established and most of the carbon projects in the world are forestry projects. It wasn't so much the term that affected our decision, we really only had the voluntary market when we first started 2 or 3 years ago.
- Even today they keep telling us that FCOP is just around the corner, and we still haven't seen a working protocol. From a market perspective we like 25-30 years as this is the decisive decade when we need to take decisive action. In 30 years, we can't presuppose the climate. There's pests and fire and other things that may need us to manage these areas differently so we may change how this project may look and that's part of the IPCA conversation.
- e) Carbon developers are concerned about carbon offsetting schemes that require short term commitments in that they could undermine the industry e.g. one year.
  - If you're getting credit for something that you're going to cut down a year from now two years from now, that's not an offset project. In fact, it's damaging to the offset market and our industry when these types of things happen.

- f) Small landowners are likely to prefer to enter an Improve Forest Management carbon project rather than Avoided Deforestation to provide them with the option to generate income.
  - I think that small landowners are going to want to continue to harvest a little bit. They
    want to have a working forest, but they want to harvest in a responsible way, and they
    probably want the financial benefit that comes from that. So, we're talking about an
    improved forest management model over avoided deforestation.

#### 3.1.4 Aggregate / Group Project

- a) Group / aggregate projects can reduce the cost for new landowners entering a carbon project.
  - We have set up this project up as a Group Project. What that means is we did a little bit more work up front on the inventory part of our project and on the paperwork part. If you're within our project area you can join as a private landowner, as a separate project. This means that some of the administrative burden to get started is reduced. Joining projects still have to go through their own inventory work. They do have to get verified and audited independent of us.
  - In the US, there are a couple of initiatives where you essentially sign up for the carbon project on a year-by-year basis and the idea is that in the aggregate you're deferring harvest across a multitude of landowners that all have a small amount of forest, and the net contribution is that the projects then contribute significantly to avoiding emissions through harvesting. Personally, I'm not convinced that its going to add very much. I'm not sure the credits are going to be viable, and that this makes a solid contribution to reducing emissions.
  - Under the Verified Carbon Standard, you can do group projects. You can incorporate multiple landowners and you don't have to do it immediately - you can do it progressively if they are within your defined project area. You need a principal project proponent for a group project so one entity needs to assume essentially the management role.
  - I've always hoped that we would see conservation-based groups try to initiate these kinds of approaches, otherwise the small landowners are going to fall between the cracks. Most of what you hear about are these very large land acquisitions, these very large-scale projects that generate many credits.
  - Where a conservation group might be able to help is in a partnership with the landowner to try to mitigate those costs [start up], with a view to recovering that over a period of time e.g. when those credits are sold.
  - FCOP is written to allow for aggregation of projects, as much as possible, I know that there are some requirements and criteria, that they must be the same type of projects to some extent, etc. That's because we're walking this thin line between removing barriers for participation, making it easier for project proponents, reducing costs, if possible because we understand that sometimes it can be prohibitive, but also ensuring the rigour of the program, and that everything that we issue as an offset unit is credible, and cannot be questioned.
  - Its [Aggregate Forest Carbon Scheme] very challenging. We do have an aggregation on the regen ag side, that's not forest carbon, its because the inventory methods are so detailed. This comes back to the protocol. As the protocols become easier, uses

technology and becomes cheaper to implement, then we can bring down the land size for project viability.

- So as far as the aggregation is concerned, we are acutely aware of the whole problem of using the land sector and offset protocols when it comes to small landholders or small projects what kills you is the transaction costs. It becomes so onerous because it's difficult.
- The savings come from certification costs. You only have to certify under one group of farmers. At the end of the year when you submit your annual report for Plan Vivo you include in the appendices a report on the farmers performance.
- What we've done forming the group project is reduce some of those barrier costs, the big one being the validation. There are ways for other landowners to roll into the project; establish a baseline; go through verification; do an inventory. Those costs could be a barrier for 40 hectares site or 10 hectares, I don't know if that could work, we haven't done any of that math.
- We did an aggregation study for a group called the Chesapeake Conservation
   Partnership. If you go to their website and look for our report. We used the Cold Hollow example, and several other examples.
- If we were going to do something on a cooperative level or a multi agency level, which would be smart if we're talking about a big undertaking like an aggregate carbon project, we should all be starting on the same foot with our technical understanding of the tools. In the category of gaps, we need good communications tools for landowners.
- We worked on having the entire process from community engagement through to verification without engaging a for-profit company. This keeps the money in the communities that are doing the work. With the existing price of carbon (even that paid by the province) no community can afford a for-profit carbon company as a middleman.

## b) The standardisation of Forest Management Plans is unlikely to reduce cost when setting up an aggregate carbon project.

- I think I'm always hesitant to say that off the shelf works because every landowner and every piece of land is different but what I think we need to look towards if we want aggregation to work, is this idea of collective co-management of these lands that have common interests. Group FSC [Forest Stewardship Council] certification. We work with the East Ontario Model Forest and the Ontario Wood Lot Association and they do this.
- In the US they're talking about a new approach called dynamic baselines where you look at an area, and you see what similar landowners are doing with the land base, and then that establishes a baseline for people who sign up for the American Forest Association.
- c) The effect of landowners leaving a Plan Vivo group afforestation scheme is managed through the identification of new landowners.
  - There's two ways you can drop out. You can drop out before the credits have been generated or after. The majority of them will drop out in the project year, or they'll get removed when we realize that there's nowhere on their land that they can feasibly plant that we know will be successful.

 None of our farmers are legally bound to the performance of other farmers. They all enter in as a group. The carbon offsets that are generated come from this group of farmers and are sold to our buyers. It does reduce risks around removals e.g. people leaving, or natural forest reversals or man-made ones etc.

#### 3.1.5 Project Viability

#### 3.1.5.1 Credit Deductions

- a) The funds placed into a buffer pool can be significant for a project, but some standards allow funds to be returned.
  - The buffer pool covers unplanned reversals that occur within the project boundary. So, with a buffer pool, what you're doing is essentially creating an insurance pool. If there's a reversal (e.g. fire, pest etc.) it means that there's been an addition of carbon dioxide to the atmosphere that has to be recovered in some way. Those emissions are recovered by retiring credits from the buffer pool.
  - Most standards have a way to credit back some of those buffer contributions. The Verified Carbon Standard for example, every five years, will net back 15% of the contributions to the buffer pool, assuming there are still credits available to do so. At the end of the project under the Verified Carbon Standard, everything gets cancelled (not paid back).
  - The standard that we are meeting requires a buffer pool of 30%. So, we must do annual change detection monitoring e.g. fire and wind throw, and we have to report and replace any losses from the buffer pool. It's one of the reasons why we picked this standard because in terms of quality that is considered, necessary to have a high-quality project to be able to compensate for any unplanned carbon loss.

## b) Leakage calculations are not standardised and can significantly impact on the viability of a project.

- Leakage accounts for reversals that are outside of project activities (e.g. timber extraction that occurs elsewhere because it did not occur on site). So, they're outside of the project boundary.
- From a project development perspective, the negatives are generally the leakage estimates which tend to be quite prohibitive. There are two types of leakage. There's activity shifting and market leakage. When you combine the leakage estimates, especially market leakage. They tend to be fairly onerous. These are deductions from the total number of credits earned to account for essentially unplanned or reversals that occur outside of the project scope.
- Looking at leakage. There are hundreds of quantification methods, and all the protocols are using different structures, different default rates. The industry as a collective suffers when we get criticized that we're all over the place in this quantification. We need to come together and align.

#### 3.1.5.2 Tests to Meet

a) Projects need to demonstrate that they have the right to sell the carbon stored and sequestered on a parcel of land.

- Within the private land base, we have the ability as owners of carbon to sell carbon offsets.
- There's a great irony in the market. Carbon doesn't work for small conservation organizations like ours. Because of the buzz around carbon markets, we're constantly asked to respond to questions from donors, funders, local government as to why we're not entering into the carbon market. Not only are we ineligible it is taking a ton of my time explaining why we're not in the carbon market.
- If it's fee simple and in your ownership, then you can enter a scheme. To be able to meet the voluntary standards you need to prove legal ownership. That should work in the compliance sector.
- When you do a carbon project, and you have a conservation covenant on that land. Your return is increased because you have reduced your insurance costs. If you have a conservation covenant, with third party oversight and the legal infrastructure, you can gain about 30% of your credits back.

#### b) Projects need to be able to demonstrate additionality to enter into a carbon offsetting project.

- You need to ensure that the location and the quality of the timber on that parcel is in a location where a timber firm could access the land and harvest, that's important. You need enough wood quality there so that it's worthwhile to do so. You need to establish that there's some intent to harvest. Maybe it's part of a timber license. In BC most old growth is probably accessible.
- If you've got an existing conservation easement already in place on a piece of property that already restricts what can be done, you can't bring that into the carbon project.
- Another way to think of it is that you can't create a carbon project in a park. For obvious reasons, parks are not under threat.
- We would like the protocols for the various carbon offset programs to be a little more serious about additionality. We really want to make sure that the behavior change imposed by the carbon agreement is real.
- Many of the existing conservation easements are Forever Wild conservation easements and they would fail the additionality test. But 99.9% of the easements that we have are Working Forest Conservation Easements or Working Forest Conservation Servitudes, these do not exclude timber extraction. We did the first Working Forest Conservation Servitude in Quebec 15 years ago.
- The Dark Wood Carbon Project took a huge hit on additionality. If they selected areas where they're going to have a lot of trouble logging because of politics, because of social license or because of operational limitations, that is not additionality. The question of additionality is supposed to get at that question of what would have happened without the carbon project. If there were political and social limitations that is not additionality.

## c) Permanence is demonstrated through contract rather than a legal mechanism such as a covenant.

 In terms of legal mechanisms, I can say that we have none in place to confirm permeance. It is a commercial contract with annual reporting and auditing to verify that.  If you develop a carbon project and then you bring a conservation easement in that's acceptable, because what you're really doing is you are essentially putting a guarantee on your project.

#### 3.1.5.3 Indigenous Consultation

- a) First Nation consultation is undertaken during the establishment of carbon offsetting areas in the absence of Treaty.
  - A whole separate level of review has been happening and will continue to happen with First Nations. When we knew of important cultural areas, we would try to put them in carbon, because that's a nice co- benefit as well. But of course, some nations, for a variety of reasons would prefer that they weren't in carbon or they recommended other areas to go in.

#### 3.2 Recommendations

- a) Establish a page on the CDFCP website that provides simple guidance on how carbon offsetting project work and can be formed, pulling on existing documentation.
- b) Undertake a business case for an aggregate forest carbon offset project around the Salish Sea that is focused on reducing start up and management costs for small landowners.

### 4 Carbon Market

#### 4.1 Issues and Opportunities

#### 4.1.1 Carbon Pricing

- a) Co-benefits can increase the value gained from the sale of a carbon credit in the voluntary market, as charismatic projects will attain a higher price.
  - A carbon project delivers other benefits such as recreational access, defining urban growth boundaries etc. Either in the short term (40 years) or long term (100 years / perpetuity).
  - We are selling in a global market, and we will promote and identify co-benefits.
  - Eighty percent of the project is within old growth forest (>120 years old). We are trying to capture a place in the market that is limited. There are not many credits from old growth forests available on the market.
  - When identifying areas of forest to place into carbon offsetting we start with the age of the trees but then look at other factors; biodiversity, socially sensitive areas (e.g. by towns and in drinking water watersheds) etc.
  - The marketing review identified that there were few charismatic old growth forest projects on the carbon market and that they would be popular as it would enable the purchaser to highlight where their credits originated in their annual sustainability reports (e.g. photo of old growth forest).
  - The loss of ecological value from small landowners is a significant issue and highlighting their ecological importance through carbon credits could be beneficial.
  - Co-benefits are beneficial for marketing. Ensuring alignment with UN Sustainable Development Goals are important for potential purchasers.
  - Indigenous reconciliation should be at the top of the co-benefits list and carbon offsetting provides an opportunity to fund that. Traditional forest enterprises that want

to develop better relationships with First Nations e.g. Cheakamus Forest could do so through a forest carbon offsetting scheme.

- Co-benefits in relation to carbon are beneficial from a qualitative perspective, but it is difficult to quantify those benefits.
- People want to buy credits for schemes that plant native tree species and where there are social benefits (e.g. gender equality, money entering the local economy etc.).
- Simplistically a carbon credit will achieve a higher price if it has all the co-benefits in place, but you are not necessarily measuring the change that has been achieved e.g. biodiversity.
- The Canadian Wildlife Services is running a small pilot to think about conservation values and indicators. They are thinking about biodiversity values rather than from a marketing perspective but their work might be relevant to quantifying co-benefits.
- The compliance market does not take into consideration if a forest has high biodiversity or cultural values because a ton of carbon is a ton of carbon to a regulated emitter, but price in the voluntary sector is driven by corporate sustainability.
- In the voluntary sector there are bolt on standards that measure your Sustainable Development Goals (SD Label) or Climate, Community and Biodiversity Standards (CCBA). That adds on co-benefits to the credit that goes beyond just pure carbon as a physical unit. The SD or CCBA Label is visible in the carbon registry from which people are buying credits.
- We need to put a lot of effort into marketing (tell the story) credits in the voluntary market, this would also be necessary in the compliance market if it was oversupplied.
- We have subsidised our carbon activities by entering a working forest conservation easement on the same land parcels (US example). This allows us to get closer to what we think the carbon price should be. The easement does not prohibit sustainable forestry which means that the additionality test is met for entering a carbon offsetting scheme. The easement pays to maintain the co-benefits not paid for by the carbon credit, water retention and quality, biodiversity, recreation etc.
- In BC the public appetite for timber harvesting has decreased so the forestry sector can gain social benefits when they place land into a carbon offsetting project rather than harvesting. This is also beneficial when selling credits.

#### b) The quantification of biodiversity gains delivered by land management practices is difficult and open to challenge compared to carbon, where a unit of carbon has been defined.

- The tokenisation of biodiversity, cultural or watershed enhancement is something that is being looked at by a number of stakeholders, but it is a challenge to quantify something that is complex like biodiversity.
- The Task Force on Nature Related Financial Disclosures (TNFD) is looking at how to quantify the impact that businesses have on nature and what the risks are to those business if nature collapsed e.g. flooding, biodiversity loss etc. They have drafted a framework that looks at biodiversity risks and impacts.
- Parts of government are interested in biodiversity credits, for example, the Species at Risk Group in the Ministry of Environment is looking at ways to incentivise habitat

protection. There are many co-benefits to protecting forest, but ultimately only carbon can be measured and sold.

- Some jurisdictions require that organisations report on the impact they have on climate change. This has been driven by investors and stakeholders wanting to understand the risks of the businesses they are investing in. Climate related financial risk disclosure is mandatory at the New York Stock Exchange.
- Financing of nature based solutions to climate change may come from organisations who have identified that their operation could impact on the natural environment. Those organisations buy biodiversity offsets to compensate for their potential effects.
- Carbon as a proxy for co-benefits is easier than quantifying each of the co-benefits directly e.g. does a frog have the same value as caribou?
- The Voluntary Carbon Stand (VCS) includes an option to gain Sustainable Development Goals Labels (SD) or Climate, Community and Biodiversity Standards Labels (CCBA). However, for each of these additional labels/standards the scheme would need to be verified (e.g. verified twice) which brings additional costs to the project and these need to be weighted against the price increase gained from the credit by having the additional label.
- Organisations are looking at placing a value on nature with a view of delivering environmental incentives e.g. agriculture. This could provide the information needed to develop biodiversity credits.

#### c) The standard followed and marketing effort will affect whether a carbon credit sells.

- Carbon credits generated through an international standard will sell. Credits sell when you can link them to a story and explain that they will deliver co-benefits. Smaller projects should focus on selling local to get a premium price.
- Dark Woods needed to establish a position to specifically sell credits. Therefore, a carbon project needs to take into consideration all cost, particularly if a third party is used to sell the credits.
- A project needs to commit to the sale of credits for the full lifespan of the project.
- d) Landowners are monitoring the carbon market waiting for the price to reach a point where there is a financial incentive. This is difficult to achieve when timber prices are high.
  - We have been watching the market and it is only in the last couple of years that the voluntary market carbon pricing got to a place where a carbon project was viable.
  - We choose stands where we can get the best carbon price or where there are other social or environmental benefits.
  - Lumber is at \$1,000 a 1,000 board feet. That's a hard conversation to have with a landowner.
  - Carbon is not priced high enough but it is close. A simple rule of thumb is that a cubic metre of timber is roughly the same as a tonne of CO2e. At \$65/tonne, we are close to crossing the tipping point of carbon prices trumping timber; and at Cheakamus there is now more revenue generated from carbon than timber. One of the biggest obstacles is that the provincial government price—offered through their carbon neutral offsetting—

is too low. They should be paying communities \$65/tonne not \$13/tonne. This is one thing that could change the game overnight. This is a low hanging fruit.

- e) It is anticipated that the scale of the voluntary and compliance market will continue to increase as will the price of carbon.
  - The voluntary carbon market is continuing to grow and is being driven by the compliance market due to the current focus on climate change. More companies are making carbon neutral or zero carbon commitments, who will not be part of the compliance market.
  - The market looks like it will continue to grow and BC project are well placed due to the co-benefits they deliver and the credibility delivered by the complex regulatory system, regardless of whether they are in a BC approved protocol or voluntary protocol.
  - The price of carbon credits will continue to rise and uptake will increase because paying \$50-65 per tonne is much cheaper than investing in carbon capture technology.
- f) Stacking of financial tools can make an unviable carbon project viable, but you have less control with tools such as easements compared to land acquisition.
  - Working Forest Easements in the US allow for sustainable timber harvest and therefore can be paired with carbon offsetting, when an easement delivers other benefits; recreation, hydrology, biodiversity etc. This means the income gained is 2-3 times that of the carbon credit alone. It was determined that an income of \$65 per tonne was needed to change behaviour.
  - Covenants in Canada can be viewed to have compliance risks in comparison to land acquisition. Some organisations are also concerned that if we started paying to establish covenants that donations would stop.
  - We need to start working with more sophisticated tools rather than waiting for people to donate land. The Nature Conservancy of Canada in Alberta does purchase covenants, where they pay per hectare to limit activities or enable activities. The real value lies in paying landowners for their rights to develop or harvest.
  - The government is starting to look at Conservation Tenures and how they are valued, which could lead to transactions. There is a lot of potential in the area of compensating landowners and tenure holders for rights or land use potential.
  - We buy land for the purpose of entering it into a carbon scheme, but there is a lot of financial risk as carbon markets are volatile. A Land Trust may not be able to use this financial mechanism for land purchase due to their governance model. Often investors who buy forests are revenue stacking and will use all tools to access funds whether that be timber harvesting or carbon offsetting. The conservation ethic can be enhanced through a conservation easement.
  - The value of carbon credits alone (\$5-50 per tonne of carbon) would not be sufficient to buy out licences for extractive industries such as logging, oil, natural gas, real estate. We will need to make the link with rural livelihoods, rural equity, urban costs.

- g) The economics of afforestation projects can be cost prohibitive because carbon sequestration is lower than losses until 15-20 year post planting, which means credits are not gained until that point.
  - It might be as much as \$15,000 per hectare to start a project, that is a lot of upfront cost if you have to wait 15-20 years till carbon credits can be sold.
  - Carbon schemes such as Climate Forward Program aim to overcome the upfront costs of reforestation by calculating the total number of credits a project will make in its lifespan, and by paying the landowner in advance of credits being generated. A company will buy the credits if they know that they need them in the future. However, there are concerns around the standards of many of the new carbon schemes.
  - The federal and provincial government are looking for projects to sequester carbon so afforestation schemes need to consider using multiple funding sources e.g. 2 Billion Trees.
  - Blended finance is becoming more common as the economics are not there for a carbon developer to plant trees. However, there are many other stakeholders who are looking for trees to be planted e.g. ecological restoration, carbon, caribou connectivity etc.
     Blended financing could make projects viable.
  - Plan Vivo Projects generate credits from the first year of planting. This is because planting projects have high upfront costs and most landowners would not have the capital to take part if the did not receive funding from the start of the project. Payments are made in year 1-10. From year 11-50 they receive no payment but they have the ability to thin the forest stand, increasing carbon sequestration.
  - Ex-anti credit is where the total carbon sequestration of the project is calculated, the model is approved and credits are paid up front. The purchaser can use the credits as they see fit but they are not realised until year 50. Ex-post is where you sell the credits once the carbon has been stored.
  - Even if you have an Improved Forest Management Project with VERA and you wanted to undertake an afforestation project you would need to go through a full separate verification process, so it is not likely to be financially viable for a small landowner to deliver an IFM and afforestation project.
  - The forestry sector can increase its carbon storage potential by replanting sites e.g. disused mill sites, that they would not legally need to plant. This would be small scale reforestation but the carbon market is very interested in removal projects over avoided emissions projects. Reforestation / afforestation projects obtain the highest price, then Improved Forest Management and then avoided deforestation.

## h) Carbon offsetting does not encourage deforestation so that a landowner can gain income from afforestation.

 It is often stated that old forests sequester less carbon than young forests so we should cut the old growth down and put it into wood products and replant to increase carbon sequestration. However, this doesn't take into consideration the fossil fuel emissions from harvesting, the loss of carbon from wood products. In addition, young forests take a long time to reach a point where sequestration exceeds losses. It would be a miss application of a carbon project and the dynamics of carbon.

- i) Selling credits locally realises the principals of circular economy.
  - Cheakamus Forest benefited from the Resort of Whistler declaring that they were going to become carbon neutral. Therefore, Whistler bought the local credits and protected the old growth forest. Elegant simple solution.
  - Keeping the sale of credits local avoids conversations around the ethics of selling to organisations such as Shell. Its important to keep locally controlled buyers and sellers, and being able to have that dialogue about doing no harm.

#### 4.1.2 Compliance and Voluntary Market

- a) Prescriptive methodologies can be advantageous as they make verification and auditing easier.
  - If methodologies are not prescriptive that means they need to be interpreted leading to higher costs when being audited.
- b) The compliance market in British Columbia is still in development through the Forest Carbon Offset Protocol (FCOP).
  - FCOP is in development and the information provided to date included barriers that would have been insurmountable for us. This is why we chose the voluntary market.
  - We don't have an established compliance market in Canada for forestry offsets. This is in development and will be important for those industries that have a cap.
  - We have been waiting a long time for a compliance market in Canada to meet the cap and trade system. At present there is only the voluntary market that includes organisations who are buying the social licence to operate.
  - The lack of a compliance market leads to uncertainty in relation to price of carbon credits and demand. There is also the issue of expired credits (not all credits are sold).
- c) A potential benefit of the draft FCOP is that it includes multiple methodologies e.g. afforestation, improved forest management and avoided deforestation.
  - FCOP is broad and tries to encompass all types of forest carbon projects; afforestation, IFM, avoided deforestation.
- d) A lack of consistency between protocols could hinder the market in the future as it could limit where credits can be sold.
  - There is a lack of consistency amongst markets and standards.
  - Following FCOP will enable someone to access the compliance and voluntary market and credits could be sold in the voluntary market at the compliance rate.
  - There needs to be alignment between protocols to enable the sale of credits across jurisdictions. This will lead to a mature market.
  - Equivalency between programs is needed to avoid limits on supply and demand.
     Alignment will remove cost for consultants to identify differences and to provide the best economic solution for a landowner.
  - Historically the province created a compliance market but there was no market for the credits. BC has developed a new protocol but its not clear if it will align with others in

Canada. People talk about the compliance and voluntary markets converging in the future.

#### e) High quality standards / protocols lead to a better price and avoid controversy.

- Annually Bloomberg does a review of carbon projects and highlights schemes that are not delivering real carbon sequestration / storage benefits. Therefore, standards need to be high so that no purchaser is cast in a bad light later. There will be a race to the top for tight standards. Schemes with loose standards will not last long.
- A proponent who uses a stringent program may see the benefits with time as other standards are undermined. The price of units is increasingly being dictated by the level of integrity of the program and the associated co-benefits.
- f) International models with lower entry requirements could lead to more landowners entering into carbon offsetting schemes.
  - The New Zealand model for carbon offsetting could be a good model for British Columbia because they are also a small population with large areas of land. They have a one-page agreement that is monitored by government using satellite imagery. If the forest is cut down they are legally bound to re-pay the money they received. Therefore, the landowner is paid a fee for keeping trees in the ground.
  - The American entrepreneurial approach of middlemen buying future carbon options by providing up front financing is not a solution for Canada. It would be better to have government or the non profit sector provide up-front financing to pay for the project services or doing the initial restoration work.

#### 4.2 Recommendations

- a) Promote the inclusion of Sustainable Development Standard (SD Label) and a Climate, Community and Biodiversity Standard (CCBA Label) in FCOP.
- b) Continue to support the Climate Action Secretariate in the development and implementation of FCOP.
- c) Seek to support the province in an incentives scheme for private landowners that would protect carbon stores, biodiversity, hydrology and cultural value.

## 5 Potential Negative Outcomes of Carbon Offsetting

#### 5.1 Issues and Opportunities

- j) A perverse outcome of carbon offsetting could be market leakage. Timber extraction reduces / stops in BC enhancing demand for logging in the Amazon and China.
  - Wood is a carbon friendly building material. If it is not used then steel and concrete would be leading to a higher carbon footprint.
  - If harvesting in BC were to decrease, then the global demand for timber could shift to less sustainable extraction sources. Carbon offsetting schemes do take into consideration leakage in Canada, but it is difficult to assess effects globally.
  - If harvesting in BC decreased we may then be a position where timber is being imported with associated environmental effects of shipping.

- We need to consider the full lifecycle of products and we need to consider substitution factors when we talk about concrete and steel.
- If there are too many carbon projects there will be an increase in timber price and people will move towards less sustainable building materials.
- k) Reducing active forestry would reduce the carbon sink strength of BC forests and increase the risk of fire and pests.
  - People forget the role that the forestry sector has in relation to the fire management and maintenance of access delivered through the course of normal forestry operations.
     Without active management there could be a greater fire risk to the community.
  - If you stop all harvesting the forest will get older and more fuel will accumulate leading to increased health issues (mountain pine beetle) for the trees and higher fire risk. In general, older forests take up less carbon than younger trees. It's a balance between how much carbon we store and how much is removed from the atmosphere.

## I) The establishment of carbon offsetting projects could have an impact on jobs within the local area.

- A carbon offsetting scheme is likely to create a few jobs for annual recording and verification. Carbon projects could impact on the forestry labour pool through reduced demand.
- Training local people to complete the annual monitoring is likely to improve the chances of success, particularly with schemes that run for 100 years.
- m) Active management is permitted under a carbon offsetting scheme but it can be difficult to quantify the effect on carbon.
  - Thinning of forests can be undertaken when a forest is in a carbon offsetting project as a means of increasing carbon storage and as a fire smart program, but it can be difficult to quantify the effect on carbon which is needed.
- n) Carbon offsetting can be viewed as green washing that organisations use to prevent making real reductions in emissions.
  - I used to be very pro-offset. I saw it as a bridge to getting us to a low carbon economy, but now I'm quite jaded. It seems to allow us to continue to emit rather than making a change.
  - To deal with concerns around carbon offsetting we choose a standard with the highest due diligence.
  - Industry should not rely on carbon credits but they will need them as they transition as they may never get to zero emissions.
  - Heavy industry is aware that they need to cut emissions, but they also know that they will never get to zero due to the nature of their activities e.g. plastics so they will always need carbon offsets if they are to achieve neutrality. It would be ironic if the carbon offsetting sector refused to work with the worst polluters.
  - The problem with carbon offsetting is that it is a transition tool. We have been dragging our feet so long the transition period has gone. We need to be paying a tax for our

forest carbon emissions which should pay people for the stewardship of our carbon sinks.

#### 5.2 Recommendations

a) Highlight existing documents that discuss misconceptions about the negative effects of the implementing carbon offsetting schemes.

### 6 Other Drivers for Carbon Storage

#### 6.1 Issues and Opportunities

- 6.1.1 Wildfire Restoration and Climate Change Resilience
  - a) Forest restoration after wildfire is being delivered by the provincial government as a naturebased solutions to climate change and to recover from fire damage.
    - The Forest Carbon Initiative is a set of forest management activities that are currently undertaken to sequester carbon e.g. planting areas impacted by fire that are not regenerating naturally; fertilising forests to increase productivity; finding alternative uses of waste fibre created during harvest; density management etc.
    - The number of trees planted by the Forest Carbon Initiative needs to take into consideration the long-term effect on the nurseries supplying the trees. Increases in supply need to be sustainable.
    - The Forest Carbon Initiative was initially funded by the Carbon Energy Leadership Fund and then 2 Billion Trees.
    - The Climate Change Informed Seed Selection Tool will predict the trees that should be planted now and in the future to respond to our changing climate.
    - Climate Based Seed Transfer is where seed lots have been opened up to seed from other areas. This would not have historically occurred but is now occurring in preparation for the effects of climate change.
    - Afforestation is the right thing to do, and governments shouldn't spend time quantifying carbon when it is the right thing to do from an atmospheric perspective.

#### 6.1.2 Local Governments Protecting Local Ecosystem Services

- a) Land Trust or similar can protect ecosystems services with local government through land purchase or other agreements / incentives.
  - In the early 2000s when community opposition to logging was increasing some organisations took an alternative approach to protesting and started to buy forested land.
  - Local governments can take an active role in the protection of drinking water watersheds, carbon, biodiversity by working with land trusts to buy forested lands. Therefore, contributing to their targets to reduce total greenhouse gas emissions locally. This approach avoids the formal carbon market.
  - Land trusts due to their governance may not be able to enter into the carbon market, but there is no reason that a local government has to spend money on the global carbon market when they could deliver offsets locally and still meet their carbon neutral / zero targets.

- Local governments are looking to offset their greenhouse gas emissions locally and subsequently provide other benefits e.g. recreation, but they are struggling to understand the best way to approach this.
- Local governments want to meet their political targets e.g. carbon zero, but may not have the time or energy to think about this too deeply, but land trusts or similar could provide local governments with a means of achieving their targets locally.
- There is a risk that meeting targets becomes a maths exercise rather than investing in tangible activities that can reduce loss of vegetation cover in watersheds. Local governments need to be aware of the carbon storage benefits that all sections deliver e.g. storm water management.
- An Avoided Deforestation tool was developed for local governments by the Ministry of Environment to quantify stored carbon through land purchase / land protection (zoning) that was cost effective. It was comprised of look up tables which indicated that if you retained forest, you would store X amount of carbon.
- Local governments were legally mandated to be carbon neutral, but they did not want to buy offsets from organisations like Shell. There is still an opportunity for local governments to work with local landowners to protect water quality, biodiversity, carbon using incentives.
- The forestry sector needs support through policy changes and from local governments to achieve their net zero targets.

#### 6.1.3 Carbon Mapping, Modelling and Tracking by Local Governments

- a) Carbon mapping should be produced for decision makers to consider how their policy decision will affect carbon stores.
  - When local governments make decisions on land use change they need information on all of the values that will be lost; carbon, hydrology, biodiversity. At the moment when local governments think about their greenhouse gas targets, they are focused on establishing an electric fleet. They need a dashboard illustrating the effects of their decisions, but it needs to be integrated for all services. This would be a way to apply a climate filter to decisions, which is currently being sought.

#### a) Methodologies for quantifying land-based carbon for local governments are not clear.

- Using ground plots and extrapolating with LiDAR is a valid approach to quantifying carbon, but you need enough ground plots, and they are expensive to survey. You could combine the ground plots with the forest inventory, which is based on remote sensing, but that has its own problems.
- Carbon accounting in the forestry sectors goes well beyond an inventory, but it is a good place to start. It provides a snapshot of how much carbon is stored in the land base at that moment in time and building towards being able to get that information from multiple snap shots and then track over time. This is a challenge that federal and provincial governments struggle with. The inventory is a good starting point, but it is important that people understand it is not the full story as it doesn't capture harvested wood products, geological deposits of carbon etc.

- The philosophy should be to think about the reservoirs of carbon that you should care about most, which is the atmosphere. If you follow that principle, then I think you'll be successful.
- You need to understand the carbon reservoirs within forested ecosystems and how they change overtime. You need to understand the transfers that are called carbon fluxes.
   Understanding all of the GHG emissions and removals that are incentivised by your management activities is required. Most accounting frameworks recognise just the component that is controllable.
- Unfortunately, I do not think that there is good guidance for quantifying changes in land-based carbon that would meet my standards. When I look at international guidance it seems in chaos. The European Commission is struggling to piece together a coherent and agreed methodology. In the province we are working to resolve this.
- I'm not sure I can recommend a certain document. I generally agree with the way the federal government is approaching carbon accounting. I am nervous about carbon accounting for regional projects due to boundary scope. The most logical place to start is at a global scale, and maybe national. This is due to the complexity of determining what is and what is not taken into consideration. Its difficult to do carbon accounting at a local scale and I think to some extent that offset protocols are designed to try and overcome the problems.
- We have a project that is compiling data on above ground biomass from field plots, not in forest ecosystems. The Canadian Forest Service have produced a dataset of soil organic carbon to a depth of 100 cm. This information has been used to calculate average carbon stock levels for Biogeoclimatic zones, which will be too coarse for what you are interested in. We have done this to verify our models.

#### b) Carbon plots are biased as they will be taken where the licensees are operating.

- I don't think forest licensees would be collecting soil data, ground plots would be tree focused. Usually when a licence holder does a forest plot its location is biased which means it is not ideal for calculating carbon stores at a local government level.
- Plots are located in fully stocked forest stands that the licensee has an interest in understanding. Therefore, they will not necessarily be representative of the average forest in your region. Whereas the province has a network that is designed to be an unbiased estimator.

#### c) Decision support tools are being developed by the province for forest management.

- A forestry decision support model is being developed that enables a forest manager to change multiple factors; productivity, harvest regime, wood products etc. and see the effect that has on the forest e.g. carbon storage. This would enable the identification of land that you would want to protect and areas that you would want to fell.
- d) Modelling and tracking of carbon emissions is a new science and there isn't consensus on approach.

- The Carbon Accounting Team, at the Canadian Forest Service, role is to produce annual estimates of greenhouse gas emissions and removals for Canada's forests. They have built all the infrastructure and the models to do that [Carbon Budget Model].
- The Carbon Budget Model is based on the Vegetation Resource Inventory because satellite imagery doesn't tell you enough to be useful for carbon analysis. That science is rapidly evolving and we are working with the remote sensing community looking at the accuracy of estimates. All you can get is above ground biomass. You can't get soil carbon or dead organic matter.
- A PICS student applied the Carbon Budget Model to the Capital Regional District area, but the model is not able to deal with urban trees. There is another model developed by the US Forest Service called i-Tree which can be used on urban trees.
- Canada's National Greenhouse Gas Inventory doesn't cover all ecosystems that would fall under the definition of nature-based solutions. Therefore, there is less incentive to create programs that will reach those ecosystems, because nationally we could not take credit for a positive change in these ecosystems.
- Local governments are tracking emissions but there is so much inconsistency. Some are just tracking operational emissions and excluding landfill emissions and they don't take into account the protection of carbon stores following land acquisition. Therefore, it becomes meaningless.
- Forest Carbon Accounting is not a very precise science. If you spend a lot of time getting a precise number there is the potential for people to game the system.
- The methodologies for quantifying land based carbon are not clear. There are quite a few different ones and I try to emphasis the National Forest Inventory methodology, but its quite expensive. There is very little data on whole ecosystem carbon.
- e) Remote sensing is being used by conservation organisations in the US to monitor compliance with conservation easement requirements.
  - Conservation easements in the US can be 100,000 acres so monitoring needs to be strategic.
  - The amount of information that can be gained from remote sensing is incredible. Just change detection provides a lot of actionable information. You use remote sensing to identify areas where additional monitoring is needed.
  - There are cases where landowners with an easement sells the land but the new owner doesn't fully understand the conditions. Remote sensing can help with the monitoring. Removing the need to rely on volunteers. The technology is getting better.
  - I think the need for field monitoring will change. A company called Upstream is working with NCC and satellite imagery with a program called Lens.
- f) Artificial Intelligence (AI) is being used to track land use change from satellite imagery, but there is still the need for human review.
  - The Canadian Forest Service has been tracking land use change within the forests since 1970.
  - They track change by looking at spectral characteristics in a time series of images. They use a two-stage process. They use the Random Forest algorithm to identify that an event / change has occurred. Then a human looks at the polygon to determine what the

change was e.g. fire, harvest, subdivision etc. At the moment you need to combine AI with a human review of auxiliary photographs e.g. aerial photos, higher resolutions satellite scenes.

#### 6.1.4 Urban Cooling

- a) Urban tree cover is not only about carbon storage it is also important for urban cooling with climate change.
  - When we're increasing urban tree cover this isn't a carbon question, it's more of a climate change question, because we're looking at being a couple of degrees hotter up here. Urban tree cover and ambient temperature management and livable walkable streets between the schools, towns and residential areas.

#### 6.1.5 Incentives

- a) The short-term nature of funding for the delivery of nature-based solutions has a negative effect as monitoring and maintenance is never included.
  - Federal funding cycles are dictated by electoral terms which impacts on the delivery of longer-term projects. Blended finance e.g. easements, carbon offsetting may be a means of delivering longer term projects.
- b) We need to increase financial incentives for private landowners to encourage protection of carbon stores outside of the carbon market.
  - The conversation around density bonus is focused on protecting greenspace, but if this became a carbon conversation that could be of interest to developers who have their own GHG targets.
  - There is a big opportunity in relation to the bio-economy, diverting waste fibre to alternative uses. There are a lot of emissions from deforestation to build houses with little effort to sell off the saw logs because the landowners are focused on clearing their plot. The bio-economy is about jobs and increasing the diversity of the forestry industry in BC.
  - Our carbon project did not take into consideration additional payments for easements, but there could be the potential for the project to grow if a payment was made from a regional district for access etc. However, the carbon project is set up to be distributed rather than concentrated, which may not be compatible with easements etc.
  - At the national level with complete policy change, land-based carbon emissions from land use change and forestry could be accounted by actual costs. Every time a developer wants to chop down an acre of CDF he has to pay for the lost carbon.
  - We looked at the idea of developing a Land Stewardship Unit. A local government could buy these from landowners to offset carbon, provide recreational access etc. The cost could be based on the carbon stored and would mean that the cost of protecting old growth was not simply born by the rural community.
  - We need a broad suite of tools: from programs like the Natural Areas Protection Tax Exemption Program, which is already there in some communities, to a simple financial tool like in New Zealand that has few bureaucratic obstacles.
  - At one end of the continuum, you have covenants and at the other you have one page sign up sheet incentives. Short term options give people an alternative to logging when

they need some money. The focus is on keeping the forest in place for the next 5 years. Monitoring would be limited.

- We need to bring together landowners and asked them what it would take for them the conserve their forest. With covenants people are still having to pay the legal bills.
- We are working with Profit a Prendre, an old piece of common law. It enables us to buy the rights for cutting the trees down on a piece of ALR where we can't use covenants. Conservation organisations could use this tool and access the carbon market, instead of relying on donations.

## c) Working forest conservation easements developed in the US could be an example of how incentives could be developed in Canada.

- The Forest Legacy Fund is funded by oil and gas revenue in the US. The fund was
  established to protect forested lands from conversion to non forest uses. Each state
  completes an Assessment of Need and identifies Forest Legacy Areas. In some states the
  focus will be on maintaining an economically viable forest sector, in others drinking
  water quality, biodiversity etc. might be highlighted. The Forest Legacy Fund can then be
  used to either purchase land or through the purchase of working forest easements.
- The nature of the easement is flexible and is dependent on the agreement objectives.
   Any management (timber extraction) that is completed needs to be detailed within a Management Plan approved by the State Forester.
- The payment for an easement is a single transaction determined using the appraisal standards (Yellow Book). In the US government can not take an interest in a property without payment.
- The value of the easement is determined by its value in an unencumbered position (no easement) versus post easement.
- Easements are now the dominant land conservation mechanism in the states. More land is conserved with easements and less is conserved with direct fee simple purchase.
- o There are examples of working forest easements on forested lands near Victoria, BC.
- Easements are cheaper than buying land. In addition, not all private landowners want to sell so easements enable landownership rights to be retained while delivering public services.
- Working forest easements in BC are complex and require a high level of technical knowledge to write one and subsequently monitor compliance. In contrast covenants are simpler and easier to monitor.
- Application of working forest easements in BC have been complicated, so there are examples of lessons that can be learnt. Covenants were introduced in 1996 and are still a relatively new tool for BC.
- The conservation sector has done a good job of buying private property or responding to donations, but not at developing other financial incentives. Potentially carbon does provide a marketplace solution that provides an incentive to land use change.
- There are landowners that would establish covenants but there are insufficient funds to pay for administration or to undertake the baseline surveys needed.

#### 6.1.6 Reducing Emissions from Burning of Harvest Residues

a) Burning of harvest residues is leading to a significant release of carbon that could be avoided.

- Approximately 5 million tons of CO<sub>2</sub> is released annually as a result of harvest residues being burnt.
- The burning of residue is in part down to culture. The forest sector is supposed to complete a fire risk assessment, but operations will burn waste material without completing the assessment. People also claim they burn to ensure that the maximum area is available for replanting.
- In part the hazard assessment didn't keep up with changes in practice e.g. branches being left thinly spread across site vs limbs and tops being removed in one location leading to an accumulation of material. To reduce burning (intentional or accidental) you need to create markets for this residual material. However, this can be complicated by the distances this material may need to be travel to be processed.

#### 6.2 Recommendations

- a) Work with local governments to achieve the protection of significant carbon stores through land purchase and other financial incentives for private landowners.
- b) Develop a methodology for local governments, with partners, to quantify above ground carbon and track change as a result of their planning decisions.
- c) Map the extent of forest plots and see if these provide an unbiased sample of the forest within the CDFCP interest area.
- d) Seek to form an aggregate of partners to access the 2 Billion Trees Fund.
- e) Seek to support the province in an incentives scheme for private landowners that would protect carbon stores, biodiversity, hydrology and cultural value.

### 7 Watershed Resilience

#### 7.1 Issues and Opportunities

- a) Ownership of drinking water watersheds should move from private managed forest lands into public ownership to ensure all associated natural assets are protected.
  - The Watershed Security Fund and Strategy are well developed and focuses on moving watersheds out of timber forest licenses into co governance; First Nations, province, local government, conservation groups.
  - Watersheds on Vancouver Islands are mainly on Private Managed Forest Lands. In the remainder of Canada, they are usually on Crown Land. The Watershed Security Fund could include land acquisition to enable co-governance between First Nations and local governments, taking ownership away from the private management forest lands.
  - Right now, if someone buys forested lands they are going to want a return by felling the timber. In Eugene, Oregon the municipal water utility company pays for a conservation easement to keep the watershed forested. Rate payers get a notice on their bill that says X amount of your payment is being used to buy a conservation easement to reduce filtration expenses.
  - New York is the biggest example where they chose to buy / place easements over the watershed to avoid the need to build a treatment facility that would have cost significant more. This was a good example of social justice for low-income rate payers. The natural solution was significantly cheaper to society.

- In the US public infrastructure funds can be used to gain control of drinking water watersheds. A by-product of this is you are also protecting parks, habitat, access etc. Could the federal government provide match funding to the BC Government to deliver authentic, measurable water quality outcomes?
- It could be possible to bring together a project in BC were the before and after value is determined (like in the US). Undertake due diligence around the money you are spending and the outcome that you are trying to achieve. What you need is an organisation that can bring the appropriate organisations together and make the purchase.

#### 7.2 Recommendations

a) Promote investment by local governments in the protection of significant carbon stores through land purchase and other financial incentives for private landowners.