

**FOREST CARBON OFFSET PROJECTS IN COASTAL BRITISH COLUMBIA:
ABORIGINAL CRITERIA, AWARENESS AND PREFERENCES**

by

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Abstract

Aboriginal groups are still developing recognition of their rights, title and capacity to co-manage their forestland. Provincially there are a number of changes in legislation and regulation that affect Aboriginal groups, particularly in the area of climate change. Aboriginal groups that are actively negotiating their legal rights need to integrate the discussion of climate change, particularly in the area of forests with their evolving legal rights. Aboriginal groups have been proactive in British Columbia but there are many critical gaps that should be explored. My objectives are to identify the key cultural, social, environmental and economic criteria of five selected Aboriginal groups in British Columbia for forest carbon offset projects, to assess their awareness and to identify their key preferences in forest carbon agreements. I travelled to five Aboriginal communities where I conducted twenty individual interviews in total to collect the qualitative data to support my research objectives. Results showed all five selected Aboriginal groups are struggling with balancing economic and environmental values for managing their forests. Cultural, social, and environmental values were closely related to each other and were preferred over economic values. However, there was recognition of the importance of generating revenue and creating employment from forest resources. The five selected Aboriginal groups in this study are at different stages of looking at carbon offsets as a new, potential forestry activity to add to their economic development portfolios. Approximately half of the Aboriginal groups in this study have a low awareness of basic carbon terminology. There was no consensus across the five Aboriginal groups for preferences for carbon project types, acceptable forest stand tending techniques and contractual arrangements, except for a high group-to-group consensus across the five Aboriginal groups on a renewable type of carbon contractual arrangement.

Preface

UBC Behavioural Research Ethics Board granted me the Certificate of Approval Number H11-03375.

A version of chapter 3 has been published. [Lori Sparrow], (2012) Carbon offsets and First Nations in British Columbia. Forestry Chronicle J. (Sept/Oct, Vol. 88, NO. 5). I carried out a literature review and wrote the article.

Table of contents

Abstract.....	ii
Preface.....	iii
Table of contents	iv
List of tables.....	viii
List of figures.....	x
List of abbreviations	xii
Glossary	xiv
Acknowledgements	xvii
Chapter 1: Introduction	1
1.1 Aboriginal forestry before colonialism	1
1.2 Inception of timber land leases to sustained yield policy	2
1.3 Recent developments in Aboriginal rights related to land use	4
1.4 Negotiating rights over forest resources	6
1.4.1 BC treaty process	6
1.4.2 Litigation.....	7
1.4.3 Consultation and accommodation.....	7
1.4.4 “Other”	7
1.5 Climate change and recent policy developments.....	8
1.6 Approach of the research	11
1.6.1 Research objectives.....	12
1.6.2 Data collection	13
1.7 Overview of the thesis structure	13
Chapter 2: Research methodology	15
2.1 Multiple case study rationale	15
2.2 Research design	16

2.2.1	Inclusion and exclusion criteria used to select cases	16
2.2.2	Research site and scope	17
2.2.3	Development of interview schedule.....	18
2.3	Aboriginal research protocol.....	25
2.3.1	Initial contact and tribal approval	25
2.3.2	Field process	28
2.3.3	Interview process	28
2.3.4	Documentation.....	30
2.4	Benefits and risks of performing this type of research	30
2.4.1	Benefits	30
2.4.2	Risks to the respondents.....	31
2.5	Analysis methods	31
Chapter 3: Literature review		33
3.1	A history of treaties in BC and challenges to incorporating new forestry values into existing Aboriginal rights and title framework.....	33
3.1.1	History of treaties in BC	33
3.1.2	Forest industry background.....	35
3.2	Property rights for Aboriginal groups and carbon interests.....	37
3.2.1	Property rights of the Indian Act	37
3.2.2	Post-treaty Aboriginal property rights	39
3.2.3	Property rights for Aboriginal groups pursuing carbon programs through forest licences 41	
3.3	Shared decision-making between Aboriginal groups and the provincial and federal governments in the forestry sector.....	43
3.3.1	Shared decision-making for Aboriginal groups without a treaty.....	43
3.3.2	Decision-making for Aboriginal groups with a treaty	45
Chapter 4: Results.....		49
4.1	Identifying criteria used by participating Aboriginal groups to evaluate potential forest carbon offset projects.....	49
4.1.1	Cultural criteria identified by the five selected Aboriginal groups.....	50
4.1.2	Environmental criteria identified by the five selected Aboriginal groups.....	54
4.1.3	Social criteria identified by the five selected Aboriginal groups.....	55
4.1.4	Economic criteria identified by the five selected Aboriginal groups	57

4.1.5	Criteria summary	58
4.2	Aboriginal awareness of forest carbon benefits.....	60
4.2.1	Very low level of awareness	61
4.2.2	Low level of awareness.....	61
4.2.3	Medium level of awareness	62
4.2.4	High level of awareness	62
4.2.5	Very high level of awareness	65
4.3	Preferences for forest-based project types group-to-group.....	66
4.3.1	Aboriginal group A's preferences for forest-based project types	67
4.3.2	Aboriginal group B's preferences for forest-based project types	67
4.3.3	Aboriginal group C's preferences for forest-based project types	67
4.3.4	Aboriginal group D's preferences for forest-based project types	68
4.3.5	Aboriginal group E's preferences for forest-based project types	68
4.4	Preferences for Improved Forest Management methods and activities	69
4.4.1	Preferences for stand tend activities for Improved Forest Management Method #1- Increase sequestration rates.....	71
4.4.2	Preferences for stand tending activities for Improved Forest Management method #2 – Reduce emissions.....	73
4.4.3	Preferences for stand tending activities for Improved Forest Management method #3- Increase carbon storage	74
4.5	Preferences for contractual arrangements	75
4.5.1	Renewability and duration identified preferences	75
4.5.2	Preferences for transferability identified respondents	76
4.5.3	Preferences for comprehensiveness identified respondents.....	77
4.5.4	Access exclusivity identified by the respondents	78
4.5.5	Preferences on decision-making for carbon revenue distribution.....	80
4.5.6	Preferences for carbon buyers.....	81
4.5.6.1	Respondent's interest in selling their carbon offsets to Pacific Carbon Trust..	82
4.5.6.2	Respondent's interest in selling their carbon offset to a private corporation ...	82
4.5.6.3	Respondent's interest for selling their carbon offsets to a non-government organization.....	83
4.5.6.4	Respondent's interest for selling their carbon offsets to a carbon broker.....	84
4.5.7	Awareness of other entities in a carbon offset project.....	85
Chapter 5: Conclusion		87
Bibliography		89

Appendices.....	93
Appendix A – Interview schedule.....	93
Appendix B Interview Participant Consent Form.....	101
Appendix C Background on carbon offset projects for site visit.....	103
Appendix D Community cover letter for chief and council (UBC letterhead).....	109
Appendix E Community consent form (UBC letterhead).....	112

List of tables

Table 1: Questions with open-end on personal views of criteria and forest carbon management for interview schedule.....	20
Table 2: Questions with close-end about Improved Forest Management carbon schemes for interview schedule, i.e. “yes” or “no” answers.	22
Table 3: Questions with close-ended and some open-ended about contractual arrangements for interview schedule.	23
Table 4: 12 Attributes of Crown forest tenures by Luckert et al, (2011). Four attributes from this framework are used as questions in my interview schedule.	42
Table 5: Summarized cultural themes noted by all five Aboriginal groups, i.e. full consensus group-to-group.	50
Table 6: Summarized cultural themes noted by a majority of the five selected Aboriginal groups, i.e. high consensus group-to-group.....	51
Table 7: Summarized cultural themes noted by only a few of the five selected Aboriginal groups, i.e. low consensus group-to-group.	52
Table 8 Environmental themes identified by the five selected Aboriginal groups.....	54
Table 9: Social criteria identified by the five selected Aboriginal groups.	56
Table 10: Economic criteria identified by the five selected Aboriginal groups.	57
Table 11: Level of Awareness scale	60
Table 12: Methods and stand tending activities for Improved Forest Management described in BC Forest Carbon Offset Protocol. The numbers and letters for methods and activities in this table correspond with the methods and activities in Figures 3-7.....	69

Table 13: Improved Forest Management techniques and examples listed in the BC Forest Carbon Protocol (Ministry of Environment, 2012).	96
Table 14 Summary of BC policies supporting climate change and forest carbon offset projects (Forest carbon portal, 2011).....	104
Table 15 Summary of the 3 phases of a Forest carbon offset project. (Forest carbon portal, BC Ministry of Environment).	106

List of figures

Figure 1: Coastal Western Hemlock Biogeoclimatic Ecosystem Classification zone (Forest Service Research Branch BC, 2013).....	18
Figure 2: Preferences identified by the five selected Aboriginal groups for sub-types of Pacific Carbon Trust forest-based projects.	66
Figure3: Overview of preferences for Improved Forest Management methods and stand tending activities by five Aboriginal groups. Numbers and letters correspond with Table 12 above.	70
Figure 4: Preferences for Improved Forest Management method.	71
Figure 5: Preferences for stand tending activities for Improved Forest Management method #1 – Increase sequestration rates.....	72
Figure 6: Preferences for stand tending activities for Improved Forest Management method #2 – Reduce emissions.....	73
Figure 7: Preferences for stand tending activities for Improved Forest Management Method #3 - Increase carbon storage.....	74
Figure 8: Respondent’s preferences for transferability for a carbon contractual arrangement.....	76
Figure 9: Preferences for comprehensiveness in a carbon contractual arrangement.	78
Figure 10: Respondent’s preferences for access exclusivity on carbon offset projects.....	80
Figure 11: Preferences on decision-making for carbon revenue distribution.	81
Figure 12: Respondent’s interest in selling their carbon offsets to Pacific Carbon Trust	82
Figure 13: Respondent’s interest for selling their carbon offsets to a private corporation.....	83
Figure 14: Respondent’s interest for selling their carbon offsets to a non-government organization.....	84
Figure 15: Respondent’s interest for selling their carbon offsets to a carbon broker.	85

Figure 16: Respondent's awareness of other entities in a carbon offset project across the five

Aboriginal groups. 86

List of abbreviations

AAC	Allowable Annual Cut
AAND	Aboriginal Affairs and Northern Development
BEC	Biogeoclimatic Ecosystem Classification
BC	British Columbia
BCFCOP	British Columbia Forest Carbon Offset Protocol
BCR	Band Council Resolution
C&A	Consultation and Accommodation
CFA	Community Forest Agreement
CFL	Community Forest Licence
FPC	Forest Practices Code
FRA	Forest and Range Agreement
FRO	Forest and Range opportunities
GHG	Greenhouse Gas Emissions
IFM	Improved Forest Management
INAC	Indian and Northern Affairs of Canada
MOU	Memorandum of Understanding
NAFA	National Aboriginal Forestry Association
NGO	Non-Governmental Organization
NTFP	Non-Timber Forest Products
OGMA	Old Growth Management Areas
PCT	Pacific Carbon Trust
PDD	Project Development Document

R&D	Research and Development
RPF	Registered Professional Forester
SFMN	Sustainable Forest Management Network
TFL	Tree Farm Licence
TSL	Treaty Settlement Lands
UBC	University of British Columbia

Glossary

Aboriginal group – Constitution Act S 35.2 defines Aboriginals as First Nations, Metis and Inuit people.

Aboriginal interest – are potentially existing aboriginal rights and/or title that have been asserted but have not been proven through a Court process.

Aboriginal rights – are aboriginal practices, traditions and customs that are integral part of the Aboriginal culture, i.e. hunting, fishing, making medicine, gathering, trapping – also governance rights, spiritual and ceremonial use of lands.

Aboriginal title: Crown land – in British Columbia 94% of the land is considered Crown land, owned by the public. However, on most of this land Aboriginal groups have not settled treaties. Court cases, based from the Constitution Act section 35 acknowledge that Aboriginal groups have rights to this same Crown land. This contests the true ownership of Crown land.

Additionality – To create forest carbon credits, the forest manager is required to demonstrate that the carbon generated (in carbon dioxide equivalents) from management actions is “in addition to” what would have occurred had no change in management strategy taken place. This criterion is often applied to GHG projects, stipulating that reductions in project-based emissions should be considered an additionality only if the project activity “would not have happened anyway” (World Resources Institute and World Business Council for Sustainable Development, 2005).

Baseline – This is a reference point from which change is measured. The question to ask in defining a baseline is, “What forest management strategy for an area would have occurred if there had been no interest in the development of a carbon project?” It is a description of what

most likely would have occurred in the absence of any mitigation of climate change (World Resources Institute and World Business Council for Sustainable Development, 2005).

Carbon Credit – The means by which trading markets recognize that a unit of carbon is (or will be) transacted in some fashion (i.e., stored in a forest). To generate a carbon credit, an action is taken that helps reduce the release of CO₂ into the atmosphere. These actions can result, for example, through forest conservation practices, partial harvesting, extended rotations, planting fast-growing tree species, or fertilization. The action must meet the test of additionality. A carbon credit is similar to a carbon offset (Greig and Bull, 2009).

Carbon-neutral – Said of an activity that removes as much carbon from the atmosphere as it might create. To be considered carbon-neutral, an organization must reduce its carbon footprint to zero. Determining what to include in the carbon footprint depends on the organization and the carbon accounting standard it follows (Greig and Bull, 2009).

Carbon offset – Similar to a carbon credit. Carbon-offsetting is the act of mitigating (“offsetting”) GHG emissions. An example is the purchase of carbon offsets to compensate for GHG emissions created by personal air travel (Greig and Bull, 2009).

Criteria - With respect to criteria and indicators for sustainable forest management, criteria are basic requirements that a company or forest manager must carry out (or at least show that it is trying to do) in order to claim that the forest is being managed in a sustainable manner (National Aboriginal Forestry Association, 2013).

Consultation - A policy to consult with First Nations on aboriginal rights and title that are asserted but unproven.

Greenhouse gas (GHG) – Chemical compounds that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth’s surface and

atmosphere. The six main GHG emissions caused by human activities are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro fluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) (World Resources Institute and World Business Council for Sustainable Development, 2005).

Traditional ecological knowledge (TEK) – defined as "a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment," (Berkes, 2005).

Treaty - "Treaties are constitutionally protected, government-to-government agreements creating long-term, mutually binding commitments. Treaties negotiated through the BC treaty process will identify, define and implement a range of rights and obligations, including existing and future interests in land, sea and resources, structures and authorities of governments, regulatory processes, amending processes, dispute resolution, financial compensation and fiscal relations. Treaties signed with aboriginal people in Canada between 1701 and 1923 are commonly referred to as historic treaties; treaties negotiated today are known as modern treaties. Modern treaties deal with areas of Canada where treaties were never signed with aboriginal peoples, like most parts of British Columbia," (BC Treaty Commission, 2013).

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Chapter 1: Introduction

Aboriginal peoples on the coast of British Columbia (BC) during pre-forestry used their own views of ontology, epistemology and Traditional Ecological Knowledge (TEK) to manage the forest (Trosper, 2007; Kimmins, 1987, 2002). The ontology view of Aboriginals is they see themselves connected to and part of the landscape whereas non-Aboriginals believe that man is not part of nature (Trosper, 2007). The epistemology view of Aboriginals is how knowledge is tied to place and to personal experience, i.e. place-bound, whereas the epistemology of non-aboriginals is influenced by western science, i.e. scientific knowledge is universal (Trosper, 2007).

1.1 Aboriginal forestry before colonialism

From time immemorial Aboriginals on the coast of BC manage the forest according to their belief that they are connected to the forest and all forest species have spirit and intrinsic value (Clayoquot Sound Scientific Panel Report 3, 1995). Aboriginal peoples have “an enduring relationship to the land, a bond so strong that it defines who they are,” (Peacock, Campbell and Menzies, 2003, p.16). In Aboriginal culture, the ownership of land and resources is the extended family, or the group that holds rights, not individuals. Everyone “shares in the rights and responsibilities of using and taking care of the land,” (Peacock, Campbell and Menzies, 2003, p.16).

Traditional Aboriginal forestry practices had a positive impact on the ecosystem because of their holistic and long term view of forest management. However non-Aboriginals arrived in North America began to exploit forest resources for logging and industrial development (Curran and M’Gonigle, 1999; Kimmins, 1987, 2002).

1.2 Inception of timber land leases to sustained yield policy

The Queen represented by the government retained forest land and resource ownership for the public of Canada. Timber harvesting was allocated by the government for generating revenue through forest leases. This led to an era where government and private forest companies' interests dominated forest management and Aboriginal interests were ignored (Wyatt, 2008). There is extensive, historical detail recorded about forestry activities during the 1700's, 1800's and the early 1900's, but to illustrate the inception of timber leases to sustained yield policy, a timeline of natural resource history will give a snapshot of how timber land lease was enacted. The timeline below provides examples of the establishment and development of natural resource industries. As these industries developed and the population increased, it became necessary to extract timber to build houses, businesses and other infrastructures.

In 1722, the British Privy Council memorandum sets out doctrines of discovery and conquest;
1849 Fort Rupert established by Hudson's Bay Company to supply coal to an American steamship line;
1849 Coal deposits at Nanaimo publicized;
1855 Nanaimo coalfields purchased by Hudson's Bay Company;
1857 Colonial proclamation claims all gold mines. Gold mining licences introduced;
1858 Colonial proclamation states that all land is vested in the crown;
1858 Fraser River Gold Rush;
1860s Commercial fishing begins to develop;
1869 Omineca gold rush begins;
1870 British North America (BNA) Act gives province control over land (s. 92);
1870 Timber lands begin to be leased;
1870 Pelagic sealing industry established (to 1911);
1871 Canning Industry begins with establishment of Fraser River Canneries;
1876 Order-in-council proclaims that the Fisheries Act of Canada extends to BC;
1877 Cannery industry established on the Skeena River;
1879 Order-in-council introduces salmon fishing licences in Canada;
1880s Dogfish oil industry established;
1881 Canneries established in the Nass River and Vancouver Island (East) Regions;
1883 Federal Railway Act (peak of railway development);
1883 Act to Encourage Coal Mining;
1884 Timber licences introduced;

1887 Victoria Electric Illuminating Company formed;
1888 BC passes first forestry legislation;
 1888 Fishing licences or permits become a requirement on the Fraser River;
 1889 Precious Metals Case establishes provincial jurisdiction over precious metals;
 1889 Federal fishing permit system introduced;
 1890s Mining boom in the Kootenays (to World War One);
 1891 Halibut fishing industry established (to 1924);
 1894 Peak of pelagic sealing industry in BC;
 1896 Discovery of gold in the Klondike;
1896 BC ceases alienating crown timber;
 1897 Incorporation of BC Electric Railway Co. Ltd.;
 1898 Hydro-electric plant built at Goldstream, near Victoria;
 1898 Silver Plate mine opened in Hedley;
 1898 Aschcroft Water, Electric & Improvement Co. builds dam on Bonaparte River
1900 Forest sector begins to dominate BC economy;
 1901 Stave Lake Power Company Incorporated;
 1903 Buntzen Lake (Coquitlam) power plant begins supplying power to Lower Mainland;
1904 American companies buy up timber licences in southern interior and coast (to 1911);
1905 Province reserves all unalienated timber lands;
 1905 Britannia Mining & Smelting commences operations on Howe Sound;
1906 Dominion Forest Reserves Act defined eight forest reserves in BC;
1909 Timber & Forestry Commission appointed to study timber land tenure in BC;
1910 Royal Commission on Timber & Forestry in BC (Fulton Commission);
 1911 First fish cannery built in the Queen Charlotte Islands;
1911 Provincial Forest Branch is established;
1912 Forest Act was developed;
1912 Province begins selling timber by auction (rights retained by the provincial crown);
 1913 Approximately 500,000 acres in BC alienated for mining purposes;
1913 Approximately 8.5 million acres in BC alienated for timber purposes;
1918 Report on BC forest resources Forests in British Columbia issued;
 1930 Canada - BC Natural Resources Transfer Agreement;
1945 Inquiry into provincial forest resources commenced;
1945 Provincial Department of Lands is divided into Land Service and Forest Service;
1945: Sloan Commission: sustained yield policy, massive industrial investment, area-based Tree Farm Licences, (Union of British Columbia Indian Chiefs, 2013).

The sustained yield approach to forest management by the provincial government focused on commercial timber products. Full scale fishing, mining and logging and the industrial development to support these industries became the norm and this trend, including

clear cutting, were a vast departure from traditional forest management that was informed of cumulative TEK, Aboriginal customs, and practices (Menzies and Butler, 2008). In *From Invisibility to Transparency: Identifying the implications* (Turner, Gregory, Brooks, Failing, and Satterfield, 2008) discuss the impacts of colonialism and the rising of the industrial resource sector on BC Aboriginal groups, such as:

“the reserve system, which deprived First Peoples of their traditional lands and resources (Government of British Columbia 1875); the banning of the Potlatch and associated ceremonies from 1885 to 1952 (Trosper 1998, King 2004); restrictions on landscape burning (Boyd 1999); and an entire series of fisheries and forestry laws that reduced the food security and health of indigenous peoples,” (Kuhnlein 1992, Turner and Turner 2007).

These examples impacted Aboriginal quality of life, but that growing tension and court cases and subsequent changes to legislation from the last three decades have started to reverse these impacts, such as recognizing Aboriginal rights.

1.3 Recent developments in Aboriginal rights related to land use

In 1982 the Constitution Act 35. (1) enacted that “existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are recognized and affirmed,” but did not define them. Court decisions have further defined these rights, Aboriginal practices, traditions, and customs that are an integral part of the Aboriginal culture, i.e. hunting, fishing, making medicine, trapping, spiritual, and ceremonial use of the lands. Aboriginal rights can be exercised in a modern manner (Government of Canada, 2013; Union of BC Indian Chiefs, 2013).

In 1997, the Delgamuukw court ruling explained the concept of Aboriginal title and how Aboriginal title is protected under section 35 (1) of the Constitution Act. This was a landmark case that confirms Aboriginal title to the land and not just rights to hunt, fish and gather (Government of Canada, 2013; Union of BC Indian Chiefs, 2013).

In 2003, the Forest Revitalization Act was influenced from the Delgamuukw and shifted towards the discussion of “certainty.” The provincial government exercised a 20% “take back” of timber volume from industry and re-allocated it amongst BC Timber Sales, Aboriginal groups, and small tenures (Ministry of Forests, 2013).

In 2004, the Taku and Haida court ruling stated that actual proof of aboriginal title is not required for the Crown to be legally obligated to consult; the Crown has a legal obligation to consult with, and if necessary, accommodate Aboriginal people before proceeding with development that may have an impact on their traditional territories. Aboriginal rights or title do not have to be proven. This case also highlighted the need to consult on administrative decisions (Parliament of Canada, 2013).

In 2005, the New Relationship initiative was introduced by the provincial government with the goal of improving the relationship between the provincial government and Aboriginal groups. It committed the provincial government to “propose new processes and structures for working together on decisions regarding the use of land and resources. It also discusses the possibility of revenue-sharing to reflect Aboriginal rights and title interests and to assist First Nations with economic development,” (Ministry of Aboriginal Relations and Reconciliation, 2013).

In 2008, the provincial government announced the Working Roundtable on Forestry for the purpose of strengthening the forest sector. In 2009, the Working Roundtable on Forestry released a report that announced six priorities and 29 recommendations. One of those priorities identified a need for First Nations to become full partners in forestry (Ministry of Forests, Lands and Natural Resource Operations, 2013).

From 2003 to 2011, the provincial government introduced Forest Range Opportunities (FRO) as a way of addressing First Nation interim agreements. The FROs were implemented as Non-replaceable Forest Licences (NRFL) for 172 First Nations and were volume-based for the duration of five years. NRFL in the range of volume per capita from 30-54m³/year and were calculated from a revenue-sharing per capita formula in the range of volume per capita \$500/year. The FROs served as Interim Agreements to fully or partial consult and accommodate First Nations. In return, First Nations agree to forestry activities on Crown lands (Ministry of Forests, Lands and Natural Resource Operations, 2013).

In 2011, Bill 13-First Nations Woodland Licence (FNWL) was introduced for the purpose of replacing FRO/FRA. FNWLs include: area-based tenures, replaceable, timber harvesting, non-timber forest product harvesting, and allows for Aboriginal stewardship (Ministry of Forests, Lands and Natural Resource Operations, 2013).

1.4 Negotiating rights over forest resources

Aboriginal groups in BC have used different strategies for negotiating rights over forest resources in their traditional territory: the following paragraphs explain the four different strategies in detail.

1.4.1 BC treaty process

The BC Treaty Process is one negotiation strategy that an Aboriginal group can exercise for pursuing resource and revenue-sharing potentially including carbon rights. “The main goal of the treaty process is to provide certainty of jurisdiction over land and resources. Through a treaty, the rights and obligations of all parties are set out, thereby resolving conflicting land ownership between the Crown (BC) and aboriginal peoples,” (BC Treaty Commission, 2013).

1.4.2 Litigation

Litigation is a different strategy utilized by Aboriginal groups regarding title. In Trospers (2011) background paper for the International Expert Group Meeting on Indigenous Peoples and Forests, he describes the experience of litigation:

First Nations seek to claim that the provincial Crown does not own the land that the nations have managed since time immemorial. Although the Crown's basis for asserting a property right is relatively weak, since the Crown never actually possessed the land, the Canadian government's claim of sovereignty carries heavy weight with its own courts. Those courts have placed the burden of proof on the aboriginal people to demonstrate that they held the land in 1846, when the United States and Britain signed the Oregon treaty, and the courts have insisted on using a non-aboriginal definition of property ownership. When the aboriginal people do establish a basis for a claim, as in the Delgamuukw and Tsilhqot'in cases, the courts find an error in the pleadings as an excuse not to award title as the evidence provides. Then the aboriginal people run out of money and internal political support to further pursue the litigation... (Trospers, 2011, p.7).

1.4.3 Consultation and accommodation

Consultation and accommodation is another strategy Aboriginal groups can use to negotiate natural resources development on their traditional territory.

In 2004, the Supreme Court of Canada ruled that national and provincial governments in Canada are required to consult with Aboriginal people and to accommodate their interests regarding the forests. There are two conditions for consultation: the strength of the case and the seriousness of the impact of the decisions. When the case is strong and the impact is great, significant accommodation would be required... (Trospers, 2011, p. 3).

1.4.4 "Other"

The Clayoquot Sound Scientific Panel process (Mabee and Hoberg, 2006) is a unique strategy that aided the Nuu-chah-nulth Nations in resource and revenue-sharing. From 1988 to 1993, Environmental Non-Government Organizations, such as Greenpeace, Sierra Club, and Forest Ethics protested against industrial logging of old growth forests in Clayoquot Sound, and against the Provincial government for allowing it. The outcome of the protests included a

science-driven study called the Clayoquot Sound Scientific Panel (CSSP), which produced reports and recommendations such as an ecosystem-based management plan and a First Nation co-management plan. The CSSP Symposium 2011 was organized in Tofino, BC on March 3-6, 2011 to address new concerns stemming from the same issue of old growth management areas in Clayoquot Sound. The situation seems to have taken a few steps back in the CSSP report and recommendation plans. This unique strategy is what I call “Other” as I look at the four different negotiation strategies being used by BC Aboriginal groups.

1.5 Climate change and recent policy developments

Climate change is a process caused by the anthropogenic release of greenhouse gases (Solomon, 2007). Greenhouse gases (GHG) are chemicals in the earth’s atmosphere, which increase the portion of the sun’s radiation that is trapped within the earth’s atmosphere. This is a natural effect but human activities are resulting in increased concentrations of GHGs in the atmosphere, especially carbon dioxide (CO₂). This effect is causing a rise in mean global temperatures. The annual CO₂ emissions from the burning of fossil fuels and through changes in land-use reached a record 8.4 billion tons in 2009 (Earth Policy Institute, 2009). Without international reform, the Intergovernmental Panel on Climate Change (IPCC) predicts a global doubling of CO₂ annual emissions by 2030 (Solomon, 2007).

Forests have the potential to help mitigate climate change because trees absorb atmospheric carbon¹ as they respire and grow. This process is referred to as sequestration. Trees and vegetation store this carbon in their biomass. Carbon accounts for approximately half of forest biomass (Greig and Bull, 2009). In fact, forests are the largest terrestrial storehouses for

¹ In this thesis, the term carbon is used interchangeably with CO₂.

carbon on the earth (Black et al., 2008). Forests represent 86% of the planet's aboveground carbon stores (Sedjo, 1993). Interestingly, forests store more than twice as much carbon as that contained in the atmosphere. Forests annually sequester nearly 10% of global carbon emissions (Black et al., 2008).

The amount of carbon that is stored within the various carbon pools in a forest depends on the forest's life stage (Bradford and Kastendick, 2010). The rate of carbon uptake into forests from the atmosphere is highest in young forest stands (Bradford and Kastendick, 2010; Böttcher, 2007). At this young tree life cycle stage, the rate of carbon sequestration within the living biomass of growing trees and understory vegetation is high. However, carbon storage is highest in older stands (Bradford and Kastendick, 2010; Böttcher, 2007). When the trees are larger and carbon stored within living biomass pools is transferred to dead and decaying biomass pools, then they release carbon gradually back into the atmosphere. The carbon sequestration rate within younger growing forests is the greatest, and the carbon pools stored within older forests is larger (Bradford and Kastendick, 2010).

These carbon sinks have the potential to turn into net carbon sources through a number of means, such as deforestation, disease, forest fire, insect infestation and poor forest management. Older forests can also be net carbon emitters due to a combination of higher decomposition rates and lower sequestration rates. Deforestation, or the permanent change of forested land to non-forested land, accounts for 20% of global greenhouse gas emissions in 2008 (Parker et al., 2008).

Provincially, there have been a number of other changes in legislation and regulations particularly in the area of reduction of greenhouse gas emissions (GHG) that create a new economic forest value and simultaneously open up space for participation by Aboriginal groups. For example, in 2007, the Government of BC created a \$75 million Public Sector Energy

Conservation Agreement (Ministry of Environment, 2011) to support the interim purchase of carbon offsets for participating public sector institutions. In 2010, the Government of BC became the first major jurisdiction in North America to achieve carbon neutral operations. Private sector companies are also experimenting with carbon management projects, following the protocols and standards developed by the Pacific Carbon Trust. The BC provincial government has been carbon neutral for two years, 2011 and 2012 (Ministry of Environment, 2011, 2013). Pacific Carbon Trust is a BC Crown corporation created to manage the province's GHG including carbon offsets (Ministry of Environment, 2013).

As First Nations, Provincial, and Federal governments grapple with policy options to mitigate or adapt to climate change, they are turning also to forest management. Forest carbon projects provide a way to manage and increase terrestrial carbon sequestration. Four different types of forest-based carbon offset project are listed in the BC Forest Carbon Offset Protocol, which is a protocol developed by the Ministry of Environment (Ministry of Environment, 2012). These project types are: afforestation, reforestation, improved forest management, and conservation/avoided deforestation (Ministry of Environment, 2012). The benefit to participating in such projects is the ability to make income off of the land base from generating carbon credits. In order to participate, a prospective individual, organization, or firm must prove evidence of a legal right to ownership of emission reductions from a carbon offset project in order to sell carbon offsets to those firms that emit carbon (Pacific Carbon Trust 2010). Forest land ownership has an important role in the carbon offset application, specified in the Project Development Document (PDD), because it identifies the project area and indicates who receives the economic benefits (Pacific Carbon Trust 2010). For Aboriginal groups that are pre- or non-Treaty, it is the federal government that owns their reserve lands through the Indian Act which is

discussed in more detail in Chapter 3 (INAC, 2013). Aboriginal groups pursuing carbon projects on Crown land will likely be required to enter into a resource and revenue-sharing agreement for carbon rights because land ownership is a critical issue. As mentioned above, carbon project owners must have rights to the carbon sequestered for the duration of the project (Ministry of Environment, 2013). There are four Aboriginal agreements that include carbon rights in BC: Haida Reconciliation Protocol-Kunst'aa guu-Kunst'aayah, Coastal First Nations Reconciliation Protocol, Nanwakolas First Nation Reconciliation Protocol and Gitanyow Huwilp Recognition and Reconciliation Agreement (Ministry of Aboriginal Relations and Reconciliation, 2013).

1.6 Approach of the research

This study looks at how different types of evolving First Nation Agreements in BC are accommodating First Nation interests in carbon offsets projects. I propose to explore what the present attitudes, and opinions that Aboriginal groups possess regarding carbon offsets. The general approach will be to address the ways in which BC Tribes navigate incorporating carbon offset programs into forest management in the complicated policy context of Treaties, litigation, and negotiation. The Aboriginal-Crown Relative Power Spectrum in using Chapter 4 of Jason Forsyth's thesis (2006) provides a framework to look at the level of decision-making an Aboriginal group has in an agreement. The levels in Forsyth's Power Spectrum help categorize the "different options for institutional design. Each institutional design option can then be described in terms of the frequency and context of Aboriginal input, the level of consultation and power based on general obligations of the Crown. The adapted spectrum also refines the focus of the institutional design options to reflect the uniqueness of the Aboriginal-Crown relationship," (Forsyth, 2006, Ch. 4 p.9).

This thesis compares five case studies of Aboriginal communities on the coast of BC that are active in the forest industry. Data was collected through individual interviews with key leaders and forestry staff at each community. The names of the communities and interviewees were kept anonymous to keep their identity confidential. The study views potential forest carbon management through the “camera lens” from the five Aboriginal communities’ perspective.

1.6.1 Research objectives

The intersection of climate change, BC Aboriginal land claims, and forest management remains a grey area and my research objectives attempt to clarify the relationships between these complicated concepts:

1. To identify the cultural, social, environmental and economic criteria used by selected First Nations to evaluate potential forest carbon offset projects;
2. To assess the First Nation’s awareness of forest carbon benefits;
3. To identify the preferences for agreement for forest carbon offsets that are attractive to First Nations

The first research objective is important because it identifies prioritized Aboriginal values related to forest land and resources. Carbon offset projects that are culturally appropriate to a tribe may help to diversify a tribe’s forestry portfolio and carbon projects may aid Aboriginal communities in meeting socio-economic objectives for their membership. However, particular carbon offset projects may be acceptable in one Aboriginal community and unacceptable in another because of the diverse community characteristics and values. One example of the diversity of Aboriginal communities is their population. For example, Homalco First Nation on the coast of BC has a total registered population of 477, whereas Squamish First Nation also on the coast has a total registered population of 4,026 (AAND, 2013). The differences in population

and proximity to urban areas may make their forest management needs different from one another. A second example is the capacity of Aboriginal administration. For instance, the number of Registered Professional Foresters, or other professionals, who work for each of the Aboriginal communities may vary therefore affecting capacity of management. Population size, capacity and other characteristics of Aboriginal communities cannot be generalized.

The second research objective is important because it surveys the Aboriginal group's awareness of forest carbon benefits. It is important to know how informed Aboriginal groups' are about what is involved in carbon project. The carbon project application process is technical and there are a number of environmental risks. It is important for tribes to first fully understand the unique subject of carbon.

The third research objective surveys what is important to Aboriginal groups in potential contractual arrangements related to forest carbon management. This section will provide from the Aboriginal perspective what Aboriginal leaders are most concerned with when it comes to negotiating long term tenure arrangements for carbon offsets on their traditional territory.

1.6.2 Data collection

Individual interviews were used to collect data. There were four interviews conducted at each of the five tribes that participated in this study. The interviews were audio recorded and then transcribed word-for-word.

1.7 Overview of the thesis structure

The remainder of the thesis is structured as follows: Chapter 2 contains the methodology. Chapter 3 contains the literature review; Chapter 4, the results of the three research objectives are discussed comparatively across the five case studies, showing the similarities and differences

between them; and Chapter 5 discusses the contributions made by this research, and suggests related future research topics.

Chapter 2: Research methodology

This chapter describes the methodologies used to address the research questions identified in Chapter 1. First, the rationale for using a multiple case study approach for this research is presented (Yin, 2003). Second, a discussion of the research design and the special methods required for research involving Aboriginal communities in BC; including the benefits and risks associated with performing this type of research. Finally, this chapter will conclude with the proposed analysis methods.

2.1 Multiple case study rationale

Forest carbon management is relatively new to the forest industry. For example, in BC, timber lands began to be leased in 1890 (UBCIC, 2013) and the first Greenhouse Reduction Targets Act: Emission Offsets Regulation was developed in 2008 (Ministry of Environment, 2013). Although there are four Aboriginal carbon agreements in BC (Ministry of Aboriginal Relations, 2013), no progress reports are in the public domain on the benefits and challenges that these early adopters face. Such a gap in literature regarding Aboriginal carbon projects in BC and the skills required to effectively manage for these new objectives provides the rationale for conducting my research. Most importantly, this study may help Aboriginal communities that are interested in gaining knowledge about forest carbon projects in the natural resource sector. The multiple case study research design was chosen to gain detailed insight into the specific context of each situation that my participating Aboriginal communities were experiencing. Although this approach prevents generalizability, it allows for a deeper understanding of the variables at play (Yin, 2009). For instance, learning about the five cases' implementation efforts to date and limitations provide better ways to understand the selected Aboriginal community's preferences in potential carbon agreements. These five case studies of Aboriginal land title, property rights

and interests in carbon offsets will contribute to the academic literature involving Aboriginals pursuing the sale of carbon offsets in BC.

2.2 Research design

The case study methodology is the chosen research design for three reasons: first, it targets the “how” and “why” questions that I pose in my research; second, it supports the little control I have over events and; lastly, it focuses on the contemporary phenomenon that is being studied (Creswell 1998: 1-403; Yin 2009, 4:1-179). The strength of this research design is that the five cases are studied in-depth and then compared, instead of one case study. This will also provide insight to the diversity across Aboriginal communities. Within each case, I collected qualitative and quantitative data through the use of individual interviews, direct observation as being an Aboriginal person, documentation, and interpretation of data.

2.2.1 Inclusion and exclusion criteria used to select cases

There are four variables I used to qualify the five selected Aboriginal groups for my study. First, I wanted to include Aboriginal groups active in the forestry industry because they are more likely to have an interest in a forest carbon management scheme. Second, I chose to focus exclusively on Coastal Aboriginal groups, excluding Interior Aboriginal groups on the premise that the styles of Coastal and Interior forestry are very distinct and effective comparison showing both types of communities is beyond the scope of this study. Specifically I chose communities located in Coastal Western Hemlock Biogeoclimatic Ecosystem Classification (BEC) Zone. Third, I wanted to include Aboriginal groups with diverse land and property jurisdictions for a potential forest carbon project. For example, in BC as I know it, there are: 1) fee simple tribal lands; 2) Federal Indian reserve lands; 3) Land Code jurisdiction, which means 25% Aboriginal self-government authority on Federal Indian reserve lands; and 4) Crown lands

included in forest licences. I want to learn the extent that Aboriginal land and property jurisdiction play a role in negotiating carbon rights. It will be interesting to learn which land and property jurisdictions are the most beneficial to Aboriginal groups trying to achieve certainty to carbon rights in their traditional territory. Finally, I wanted to include an Aboriginal group that has an Old Growth forest within their traditional territory because Old Growth forests store higher amounts of carbon than younger forests (Greig and Bull, 2012). It was not a criterion to select Aboriginal groups that were actively pursuing carbon feasibility studies, or Project Development Document (PDD). I was looking at what tribes wanted to do about potential carbon offset projects.

All other Aboriginal groups in BC were excluded from my study for three reasons. First, the context of forestry in the BC Interior is different than forestry on the BC Coast. For example, it may be viewed that Coastal forestry would be more ideal for forest carbon projects because there are less numbers of forest fires and less severe intensity of forest fires. For example, the BC Coast has lower insect epidemics, i.e. BC Interior had the Mountain Pine Beetle epidemic (Greig and Bull, 2011). For this reason I selected Aboriginal groups on the coast of BC. Secondly, other Coastal Aboriginal groups were excluded because I was looking for variation in land title, i.e. Treaty status. For example, I wanted to have at least one Aboriginal group in the land title category of a settled Treaty because it provides a representation for an Aboriginal group with fee simple land title and exclusive ownership of forest resources. Then, I also wanted an Aboriginal group active in the BC Treaty Process, also known as pre-Treaty.

2.2.2 Research site and scope

The geographical scope of this project is the Coast Western Hemlock BEC Zone in BC's south coast region (Figure 1). The range of the Coastal Western Hemlock BEC Zone stretches

along the entire coast of BC (Ministry of Forests, 1999). I selected five cases that will remain anonymous at the request of the participating tribes that reside in this productive coastal region. The five cases will be referred to as Cases A, B, C, D and E for the duration of this project. The scope of the case studies is restricted to exploring potential carbon benefits and undefined carbon rights for the five selected Aboriginal groups.

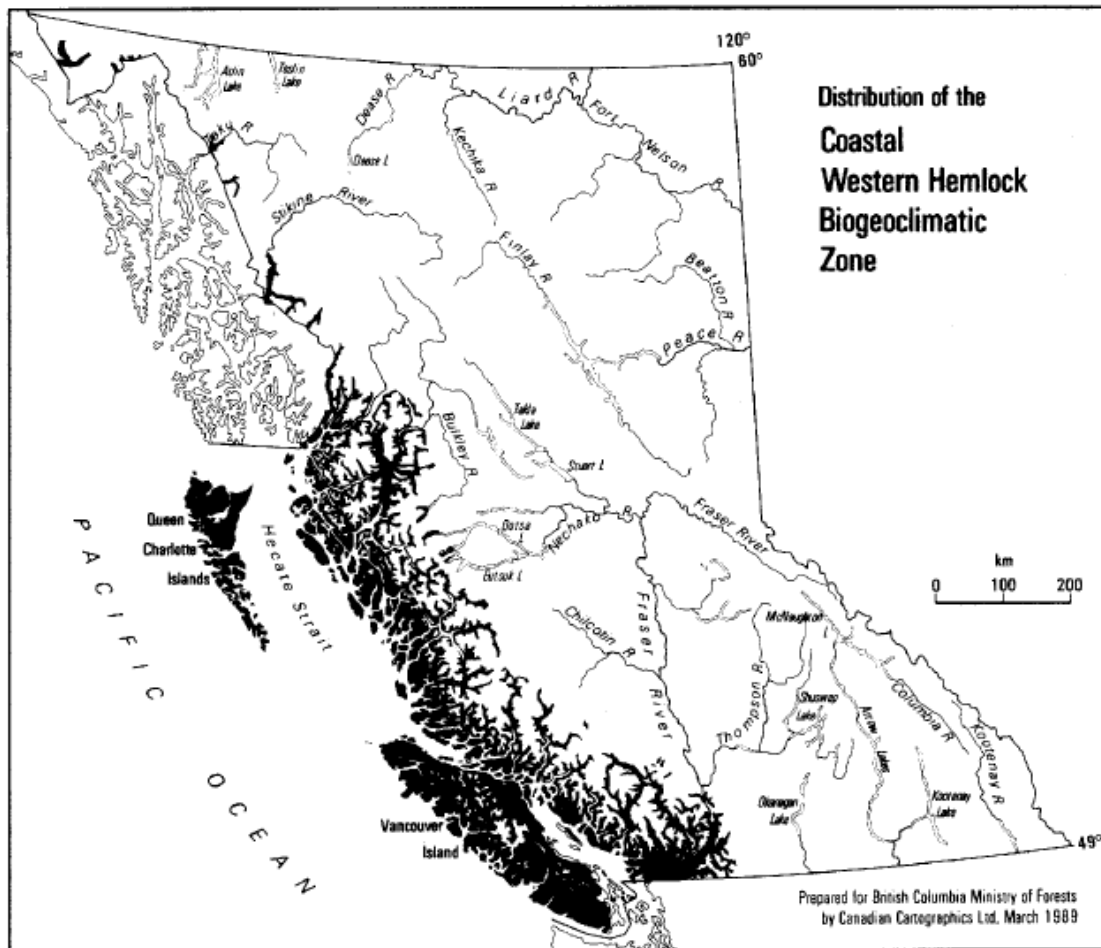


Figure 1: Coastal Western Hemlock Biogeoclimatic Ecosystem Classification zone (Forest Service Research Branch BC, 2013).

2.2.3 Development of interview schedule

I chose to use a qualitative approach that was based on one-on-one interviews. The interview schedule was the main tool used to collect data in this research project. I had follow up

questions and elaborated by evaluating interview participant's responses and asking more detailed questions about certain phenomenon discussed during the research period.

It was after the initial site visits that I conducted pre-test interview with four people with experience and knowledge of researching Indigenous communities from the University of British Columbia: Professor Dr. Ronald Trosper, Dr. Reem Hajjar, Andrea Lyall and Professor Dr. Linc Kesler. I used the feedback from my pre-test interviews and revised for a finalized set of interview questions.

The first section of the interview schedule was composed of open-ended questions about values, trade-offs, and awareness (see Table 1). Criteria developed by the National Aboriginal Forestry Association were adapted and used to collect data from interview participants (NAFA, 2011). In this section, the interview participants were asked to prioritize their values related to the forest. These values became their criterion.

Table 1: Questions with open-end on personal views of criteria and forest carbon management for interview schedule.

	Criteria & forest carbon management
	Priorities / hierarchy
1.	There are four categories of values that you have to consider when managing a carbon project and they are: cultural values, environmental values, economic values and social values.
a.	When I speak about cultural values I am referring to any kind of forest harvesting activity or any kind of forest-related activity that is related to your cultural, whether it is a daily, weekly, monthly, seasonally, or annual event. What are some cultural values that you consider a priority?
b.	When I speak about environmental values I am referring to any kind of environmental condition or environmental characteristic about the forest that is related to your cultural harvesting of timber or non-timber forest products. What are some environmental values about the forest that you consider a priority?
c.	When I speak about economic values I am referring to any kind of business activity that involves revenue for your band. What are some economic values that you consider a priority?
d.	When I speak about social values I am referring to any kind of social activity or value carried out or managed for in your community in day-to-day life whether it is for leisure, subsistence or work related. What are social values that you consider a priority?
	Personal views on the process of prioritizing
2	Now that you have listed your values, I would like to discuss how you prioritize them for the sake of a carbon offset project. I am wondering what your personal views are on your process of prioritizing. And what your personal views are of the values that should get priority. Let's start the questions for this area.
a.	How does your community currently balance all their values on the land?
b.	How will you decide to make a trade-off between economic, environmental, cultural and social conflicting priorities in a potential carbon offset project?
c.	Have you had to make any trade-offs to date, or do you see any trade-offs that you expect to make?
d.	How important is it to you to be part of the decision-making process?
e.	How will you choose which one of these values that you are willing to compromise for the sake of a carbon offset project?
	Forest Carbon Management Projects
3.	Now I am going to ask you about your personal views about carbon offsets.

	Criteria & forest carbon management
a.	Can you describe a carbon offset project that you would like to have?
b.	What do you think is involved in starting up a forest carbon management program? What do you think the risks are? What would you be worried about?
c.	Has your Nation tried this before? Why or why not? With whom? Where in the process are you?
d.	How will your existing land title and authority support potential carbon benefits? (i.e. agreements, MOUs, forest licences, negotiations, etc.)
e.	How will your existing land title and authority restrict potential carbon benefits?
4.	Are you aware of baseline and additionality with respect to carbon offsets?
5.	There are several types of carbon offset projects but what I am going to focus on is just one type which is Pacific Carbon Trust (PCT) forest-based projects. Within the PCT forest-based projects type, there are 3 different types, I am going to list and briefly describe them. And then I am going to ask you which one you prefer?
i)	Afforestation means the direct human-induced conversion of land that has not been Forest Land for at least 20 years prior to project commencement to Forest Land through planting, seeding and/or human-induced promotion of natural seed sources.
ii)	Reforestation means the re-establishment of trees on land through planting, seeding and/or human induced promotion of natural seed sources.
iii)	Improved Forest Management means a system of practices for stewardship and use of forest land, which may include production of harvest wood products, which reduces GHG emissions and/or increases GHG sinks / carbon pools.
iv)	Conservation / Avoided Deforestation means preventing the direct human-induced conversion of Forest Land to a non-forest land use. Logging as part of forest management is not included as a potential conversion / deforestation activity that may be avoided under this definition.
a.	Which one of these different types would you prefer? Why?

The rest of the interview questions were closed questions, i.e. “yes” or “no” and multiple choice, mixed with some follow up open-ended questions. The rest of the interview questions focused on interests of forest carbon management and preferences for forest carbon contractual arrangements. I used basic forest carbon terms and concepts about the process of submitting a

PDD and forest carbon methods in my interview questions (see Table 2). These terms and concepts came from the British Columbia Forest Carbon Offset Protocol (BCFCOP) to help answer my second and third research objectives (Ministry of Environment, 2011, 2012).

Table 2: Questions with close-end about Improved Forest Management carbon schemes for interview schedule, i.e. “yes” or “no” answers.

Forest carbon management			
6. I am going to list the eligible management activities or techniques of Improved Forest Management, which techniques or methods are acceptable or interesting to you?			
Technique/Method	Examples	Yes	No
6a. Increase sequestration rates	Fertilization	Yes	No
	Improving stocking	Yes	No
	Reducing regeneration delays	Yes	No
	Use of faster growing trees/seeds	Yes	No
	Thinning	Yes	No
	Diseased and suppressed trees	Yes	No
	Managing competing brush	Yes	No
	Short-lived forest species	Yes	No
6b. Reduce emissions	Capturing mortality	Yes	No
	Reducing natural disturbances	Yes	No
	Reducing burning	Yes	No
	Reducing new road widths	Yes	No
6c. Increase long-term carbon storage in forests and wood products	Conservation areas	Yes	No
	Reduced harvesting through forest cover constraints	Yes	No
	Increasing proportion of long lived harvested wood products in conjunction with other changes in forest management	Yes	No

I also adapted the framework called the Twelve Attributes of Crown Forest tenures (Luckert et al, 2011) in my interview questions to help answer my third research objective (see Table 3). I used the characteristics of Crown Forest tenures that directly relate to carbon arrangements to collect data on preferences on carbon contractual arrangements.

Table 3: Questions with close-ended and some open-ended about contractual arrangements for interview schedule.

	Contract arrangements
7.	Now that we have talked about values and some aspects of forest carbon management, next I am going to talk about what is important to you about contractual arrangements.
7a.	Duration and Renewability refers to the period or term over which a property right can be exercised; it also refers to whether it can be renewed or non-renewable. Which type would you prefer: <ul style="list-style-type: none"> ◇ Renewed? ◇ Non-renewable?
i)	If renewed, how long would you want the contract to be renewed to?
ii)	If nonrenewable, how long would you want the contract to be?
7b.	Transferability refers to the extent to which tenure holders can sell, lease, post as collateral, or otherwise dispose of the property to which they hold rights. Do you want your First Nation to be able to sell its carbon offset contract? <ul style="list-style-type: none"> ◇ Yes ◇ No Do you want your First Nation to be able to lease its carbon offset contract? <ul style="list-style-type: none"> ◇ Yes ◇ No Do you want your First Nation to be able to post as collateral its carbon offset contract? <ul style="list-style-type: none"> ◇ Yes ◇ No Do you want your First Nation to be able to dispose of its carbon offset contract? <ul style="list-style-type: none"> ◇ Yes ◇ No Are there any other contractual arrangements you would find acceptable for Transferability that has not been mentioned?
7c.	The more inclusive tenure is in terms of the number of resources to which it grants rights, the more comprehensive it is said to be. Fully comprehensive rights to forests would include the land itself, all botanical products, the soil, wildlife, water, fish and subsurface minerals. What contractual arrangement would you find acceptable for Comprehensiveness? For example: <ul style="list-style-type: none"> ◇ the land itself ◇ all botanical products

	Contract arrangements
	<ul style="list-style-type: none"> ◇ the soil ◇ wildlife ◇ water ◇ fish ◇ subsurface minerals ◇ timber ◇ other? _____
7d.	Exclusivity refers to the right of tenure holders to prevent others from freely enjoying the benefits of the property to which they hold rights; it also refers to the degree to which individuals or groups are allowed access. What contractual arrangement would you find acceptable for Exclusivity?
	<ul style="list-style-type: none"> ◇ Exclusive ◇ Non-exclusive
7e.	What kind of aspects would you want in a contractual arrangement that have not been discussed?
7f.	How would you like to distribute revenue from forest carbon offsets?
	<ul style="list-style-type: none"> ◇ Monetary distribution to all band members upon payment ◇ Specified Community Fund, Department or Program decided before hand ◇ For Chief and Council to decide ◇ Other: _____
7g.	What benefits would you like to be included in the contractual arrangement that you have not mentioned yet?
8.	Which of the factors above are the most important?
9.	What benefits do you expect to see from a forest carbon offset project?
9a.	What would you like to see?
9b.	Are there any non-monetary benefits that you would like to see?
9c.	Given what you told me so far, are there any other criteria/values that you would use to evaluate the success of this carbon offset project?
10a.	Would you want to work Pacific Carbon Trust on a carbon offset project? Why? Why not?
	<ul style="list-style-type: none"> ◇ Yes ◇ No
10b.	Would you want to work with a Private Corporation on a carbon offset project? For an example, Shell Oil from Alberta or another? Why? Why not?
	<ul style="list-style-type: none"> ◇ Yes ◇ No
10c.	Would you want to work with a non-government organization such as an environmental group on a carbon offset project? Why? Why not?
	<ul style="list-style-type: none"> ◇ Yes ◇ No
10d.	Would you want to work with a Trading House or Broker on a carbon offset project? Why? Why not?

	Contract arrangements
10e.	If no to above questions, then who would be acceptable?
11.	Who would you not want to work with on a carbon offset project? Why?
12.	Awareness of other entities in a carbon offset project:
	Registries? ◇Yes ◇No
	Exchanges? ◇Yes ◇No
	Validators? ◇Yes ◇No
	Verifiers? ◇Yes ◇No
	Standard making bodies? ◇Yes ◇No
13.	Those are all the questions I have for you today. Is there anything else you would like to contribute?

For the full interview schedule, refer to Appendix A Interview Schedule. In preparation for outlining the specific research design undertaken in this project, it is first necessary to discuss how to approach Aboriginal research respectfully and meaningfully

2.3 Aboriginal research protocol

2.3.1 Initial contact and tribal approval

Aboriginal research is a complex area of study because there is great variation among tribes in culture, population, the history of their relationship with the governments, land area, and resource endowment and exploitation. Despite variation, there is a consensus that Aboriginal research is more sensitive than other community-based research because of the issue of trust. This research requires a higher level of sensitivity than what UBC's code of ethics deems standard. Thus, my interaction with the Aboriginal group leadership and interviewees followed the university's standards for code of ethics on human subjects but I also offered extended measures of trust and confidentiality of information. For example, I provided the option of a teleconference with my chair supervisor to answer more comprehensive questions by an Aboriginal group's leaders. Also, I offered to sign a confidentiality of information agreement that outlines that the tribe owns the data upon project completion and if I wish to use it at a later

date then I would require Chief and Council's permission. One other extended measure of trust was my offer to provide a presentation of study results upon completion, a copy of my thesis and an invitation for my program's oral defense. Interestingly, two Aboriginal groups had their own types of confidentiality agreements in place with a protocol that required approval. One of these two tribe's confidentiality of information agreement included a provision for draft copies of my thesis as I was completing the final copy as a monitoring mechanism. This ensured the Aboriginal group that their confidential information would not be accidentally made public. Three Aboriginal groups did not feel the extended confidentiality measure was necessary in addition to the university's code of ethics. I did have each tribe's Chief and Council sign and date an informed consent form stating that I would be adhering to the university code of ethic policies (see Appendix B-1). Additionally, the interviewees were presented with informed consent forms at the beginning of each interview. The rationale for the informed consent forms was to assure in writing the importance of confidentiality of information and outline that ethical conduct would be used, especially when the subject of my questions included cultural, environmental, economic and social values. Furthermore, I included questions about community objectives and priorities on their forest land. Both consent forms explained the option for the interview participant to terminate the interview at their own discretion without any penalty.

From my experience as an Aboriginal community member for interacting with Aboriginal leadership, I used the following approach as my initial contact. Ultimately, if Chief and Council decide to participate, this is the most respectful way for both the researcher and the tribe:

- ☐ Phone the receptionist and ask for the forest or natural resource manager's full name, job title and email address. Use this information to write a letter of introduction (see

Appendix B) and invitation for the tribe to participate in a research project, and then submit via email;

- ☐ A request of this nature must be passed with quorum at a scheduled Chief and Council meeting. The forest or natural resource manager submits the letter of introduction thus requesting to introduce the research proposal on the meeting agenda.
- ☐ If leadership decides to participate, a project contact person on their behalf is assigned and this person makes the next contact with the researcher via email to introduce him or herself, and confirm that the tribe will participate.
- ☐ The identified key Aboriginal group contact person assists the researcher in arranging field work visits. Three visits per Aboriginal group.
- ☐ If an Aboriginal group required the researcher to sign a confidentiality agreement, then this next step would be next. The Aboriginal group contact person would inform the researcher that a confidentiality agreement was being written and then a senior administration staff member has to approve it before it is sent to the researcher to be signed. Two of the Aboriginal groups had this extra measure in their agreements.
- ☐ Blank community consent forms (see Appendix B-1) were sent for the tribes to sign via the assigned contact person because it was required by the school's code of ethics protocol.
- ☐ The contact person and researcher coordinate an initial site visit and project presentation to introduce researcher to Chief and Council. I used this as an opportunity for Chief and Council to remove, add, or modify my proposed research objectives; and to answer questions.

2.3.2 Field process

I received confirmation and written community consent forms from two Aboriginal groups, so I submitted my ethics application for my research. In December, 2011, I received ethics approval from the UBC, but I had to make amendments to my proposal to them because I did not anticipate the refusal to participate in my research by a third unnamed Aboriginal group. I removed that Aboriginal group from my proposal and approached three other Aboriginal groups using the same protocol mentioned above. I made an amendment to my proposal and submitted another ethics application with the three new Aboriginal community informed consent forms.

The fieldwork protocol for interviewing human subjects requires two site visits. I was required to meet with the community first and then conduct the interviews at a second site visit. I requested initial meetings with the five Aboriginal groups where I presented an outline of my research and an opportunity to introduce myself and answer questions. I explained that I would like to conduct interviews at a second site visit. I also said that upon research project completion I would be returning to the tribes to provide a presentation, or webinar, or teleconference to present the study findings. I informed the Aboriginals that the three visits would be the extent of my interaction with them unless they would like me to provide other technical support in the area of carbon offsets at their request.

2.3.3 Interview process

In total, 20 individuals participated in the research, and broke down into four participants at each of the five Aboriginal groups. The same interview process was utilized for all interviewee respondents, adhering to UBC's policy for conducting research on human subjects

(UBCV Board of Governors 2012:1-5). The following steps were followed prior to each interview:

1. Explain the research project's scope and objectives.
2. Explain my methodology and how I will handle the interview data, ensuring confidentiality and anonymity of community name and interviewee name through the alpha-numeric coding.
3. Inform the interview participants in my research that their participation is voluntary and they may stop at any time during interview if they feel uncomfortable.
4. Provide the individual informed consent form for them to read, sign, and date.
5. After the individual consent forms are signed, ask if there are any questions before the interview begins.
6. Review the individual consent form to verify if they ticked the box where they agreed to be audio-recorded.
7. If audio recording was acceptable, then turn it on and commence with questions.

All 20 interviewees consented to being audio-recorded; therefore, the raw data from these interviews was in form of audio transcripts. The length of the interviews varied from 45 minutes to 1 hour and 50 minutes. Most of the interviews were one hour in length. Interview participants held positions that ranged from tribal leadership members to administration staff that knew the information about their Aboriginal group's position on forest carbon. Although I suggested interviews with leadership and forestry staff, I let each tribe's Chief and Council select their four interview participants. Interviewees consisted of people from the following positions across the five selected First Nations:

- Hereditary Chief;

- Elected Chief;
- Elected Councillor;
- Forestry or Natural Resources Department;
- Land Department;
- Economic Development Department;
- Archaeology Department;
- Cultural Department.

2.3.4 Documentation

The documentation that I reviewed to become oriented with my five case Aboriginal groups were all publicly available information such as various stewardship plans, interim agreements, court cases, and journal articles (AAND, 2012; Ministry of Aboriginal Relations, 2012; Judgments of the Supreme Court of Canada, 2012).

2.4 Benefits and risks of performing this type of research

2.4.1 Benefits

Forest carbon management is my research topic, but my sample is Aboriginal groups. It will be beneficial to learn what my selected Aboriginal groups want to do about carbon offsets. A benefit is my Indian Status under the Indian Act. The combination of my life experience under the Indian Act and its reserve system, being an Aboriginal community member, as well as an Aboriginal researcher from a university allows my interpretation of data to be culturally appropriate and it will contribute to academic literature. This study focuses on the Aboriginal perspective and the interpretation of data by an Aboriginal academic.

2.4.2 Risks to the respondents

A risk in performing this type of research would be to conduct this research without the informed consent by a community's Chief and Council. Also, it would be a risk to conduct interviews without interviewee informed consent. Finally, there is risk of someone putting pieces together of this study and figuring out the identity of one or more of my selected Aboriginal groups or interviewees. Through careful research design and fact checking through my literature review exercise I mitigated these risks to the best of my ability.

2.5 Analysis methods

The interviews were audio recorded and I transcribed word-for-word. My interpretation of the meaning of each answer with my understanding from my academic perspective and from my cultural perspective was used in the analysis.

To collect data for the first research objective I used open-ended questions, (see Table 1 above). I grouped the data according to themes from my perspective. I organized the themes according to the number of Aboriginal groups that alluded to each identified theme. I summarized the themes across the five Aboriginal groups in a table with a checklist that shows the identified criteria. I did not identify how many interviewees at each Aboriginal group that identified a certain theme. If one interviewee listed a certain criteria then it was recorded for their Aboriginal group. I did not evaluate and differentiate criteria within Aboriginal groups. Rather, I grouped and summarized criteria across the five Aboriginal groups.

I developed open-ended questions to collect data to address the second research objective (see Tables 1 and 2 above). I created a level of awareness scale with five points: very low, low, medium, high and very high. My interpretation of data was at the Aboriginal group level. I did

not look at individual interview participants' awareness within each Aboriginal group, only across all five Aboriginal groups.

I developed closed questions to collect data for the third research objective (see Table 3 above). This allows me to count each answer within a tribe and show quantitative data across the five tribes. The results for this section of results will be in graph form.

Chapter 3: Literature review

A discussion of the intersection of the three following areas is necessary in order to address my research objectives listed in Chapter 1. First, the history of Treaties in BC and forest industry will be discussed. Secondly, the property rights relevant for Aboriginal groups in BC will be discussed. Lastly, shared decision-making between Aboriginal groups and the provincial and federal governments in the forestry sector will be presented. Breaking down these three areas is how I am relating my research to existing climate change and forestry frameworks. An understanding of these areas is necessary to lay a foundation for the rest of my research.

3.1 A history of treaties in BC and challenges to incorporating new forestry values into existing Aboriginal rights and title framework

The evolving role of Aboriginals in forest governance is necessary to understand the challenge associated with incorporating forest carbon management into Aboriginal forest stewardship and forest tenure rights.

3.1.1 History of treaties in BC

Of the approximately five hundred Aboriginal groups in Canada, approximately two hundred reside in BC (Kim et al. 2012). However, there are only four modern-day Treaties signed in BC, Nisga'a (2000), Tsawwassen (2009), Maa-nulth (2011) and Sliammon (2012), (BC Treaty Commission 2009; Nisga'a Lisims Government, 2012). The negotiations for the Nisga'a Treaty began in 1890 and took 110 years to settle. The Nisga'a Treaty process is unique for many reasons, for instance the length of the negotiation, and the layers and persistence of struggle for land rights. In 1973, the Nisga'a litigated against both the federal and provincial governments for treaty negotiations. In the *Calder* case, the Nisga'a Tribal Council asked the courts to recognize that Aboriginal title to the land existed pre-contact, was never extinguished

and still exists. Ultimately, the Nisga'a did win the case in the Supreme Court of Canada, because it went to a split decision on a technicality. However, this Supreme Court of Canada court ruling resulted in the first federal government to agree to begin discussions regarding the treaty, followed by the provincial government. In the 1990s, the BC provincial government developed a land claims negotiation policy (Aboriginal Affairs and Northern Development 2010). This landmark case laid the foundation for other Aboriginal groups to pursue treaty negotiations. The remaining three treaty agreements discussed in this chapter were negotiated through the BC Treaty Commission, an independent group that facilitates negotiations between the Aboriginal group, provincial and federal government and was developed in 1992.

There are six stages to the BC Treaty Process. Stage 1 is the Statement of Intent to Negotiate. Stage 2 is the Readiness to Negotiate. Stage 3 is the Negotiation of a Framework Agreement. Stage 4 is the Negotiation of an Agreement-In-Principle. Stage 5 is the Negotiation to Finalize a Treaty. Stage 6 is the Implementation of the Treaty. This process is the one currently used in modern to facilitate treaty-making in BC. It works toward addressing the interests and needs of Aboriginal rights, self-governance, land and natural resources, fishing, forestry and financial arrangements (BC Treaty Commission, 2013).

There are 60 Aboriginal groups in the BC Treaty Process currently in negotiations at different stages of the process with the provincial and federal governments (BC Treaty Commission 2009). Until these treaties are settled, the majority of Aboriginal groups in BC have to manage their forests on reserve lands under the 1876 *Indian Act* (Department of Justice Canada 2012). The *Indian Act* literature is a grey area for Aboriginals looking to pursue carbon offsets on Indian reserve lands because it is outdated and does not include carbon rights explicitly. This topic is discussed below in Section 3.2.1. Although Treaty agreements provide

the land title to pursue carbon rights, the four existing treaty agreements in BC do not include carbon rights. There is another avenue for Aboriginal groups in BC that would appear relevant for pursuing forest carbon management and that would be through an existing forest licence owned by an Aboriginal group. However, there are no examples of carbon rights added to Aboriginal forest licences so there is no clear path for Aboriginal groups who might be interested in pursuing this option through the forest industry.

3.1.2 Forest industry background

Luckert et al. (2011) look closely at how Aboriginal groups were overshadowed historically by the business–government partnership that controlled forest governance and dictated BC’s sustained yield approach to the Allowable Annual Cut. Those circumstances led to changes in recent decades for forest governance, which include Aboriginal consultation and accommodation, and consideration of other Aboriginal interests and values in sustainable forest management. This literature includes a discussion of the *Haida v. BC (Minister of Forests)* 2004 SCC 73 case and provides an accurate account of the events that led to our current forest policies. According to *Haida*, the duty to consult and if necessary accommodate is grounded with the Crown, not forest companies. Also, the actual proof of Aboriginal rights and title do not need to be proven before the Crown is legally required to consult and if necessary accommodate Aboriginal groups. Therefore, the *Haida* decision set the stage for Aboriginal groups to use “reasonable accommodation” as a mechanism to achieve resource and revenue sharing because it included the two conditions for consultation: the strength of claim and the seriousness of the impact on Aboriginal interests. Before consultation and accommodation Aboriginals only had two processes for negotiating aboriginal title and rights: litigation or treaty negotiation. Both of these strategies provided limited payoff in the past. Consultation and accommodation could be

beneficial for Aboriginal groups without treaties who are trying to address their socio-economic objectives through carbon offsets. Aboriginal groups that do not have fee simple land are at risk of other players in the carbon industry and the carbon project process taking over carbon offset projects and benefits. So, without land title or a written agreement that grants carbon rights it may be viewed that Aboriginal groups are in a vulnerable position.

Three pioneering Aboriginal protocols in BC for carbon – discussed in more detail in Section 3.3 – are the Haida Reconciliation Protocol-Kunst’aa guu-Kunst’aayah, Coastal First Nations Reconciliation Protocol, and Nanwakolas First Nation Reconciliation Protocol. Another trend aiding Aboriginals in forest governance is the First Nation Woodland Tenure, which evolved from the *Forestry Revitalization Act* of 2003. It was through the Ministry of Forests, Lands and Natural Resources Operations that the provincial government began negotiating interim measures agreements, specific to forestry and land, with Aboriginal groups. June 2011, the First Nation Woodland Licence (FNWL) is a new forest tenure specific to Aboriginal groups that was introduced through BC Order In Council 236 – Volume 38, Number 13 (First Nations Forestry Council, 2012). The FNWL is long-term and area-based, with the objective of “allowing First Nations to have an increased role in forest stewardship, to protect traditional uses, to manage forest and land use in the area, and to improve their ability to secure investment and loans,” (Ministry of Forests, Lands and Natural Resource Operations 2011). FNWL are administered under provincial forest regulation, including the *Forest Act* and *Forest and Range Practices Act* so if an Aboriginal group wants to include Aboriginal values they would have to add on top of these existing and perhaps sometimes competing provincial laws.

3.2 Property rights for Aboriginal groups and carbon interests

The property rights of Aboriginal groups in BC are reviewed in three ways. First, Aboriginal groups that have not settled treaties exercise their property rights identified in the *Indian Act* (1876). These rights are outlined and considered for how they may provide options for Aboriginal groups to pursue potential carbon offsets on reserve lands. Second, BC Treaty Agreements are looked at for post-Treaty Aboriginal groups' in the context providing opportunities to pursue potential carbon offsets on their fee simple lands. Third, the property rights of the provincial Crown forest tenure framework will be looked at as an option for Aboriginal forest licence holders to pursue potential carbon offsets with their forest licence.

3.2.1 Property rights of the Indian Act

The *Indian Act* does not include carbon so it is unclear how Aboriginals can approach carbon offsets under the *Indian Act* (1876). This presents a challenge for individual Aboriginal groups looking to own a carbon project on Indian reserve lands. As mentioned in section 3.1.1 History of Treaties in BC, the majority of Aboriginal groups in BC does not have fee simple land and/or settled treaties. The property rights as defined in the *Indian Act* are utilized when managing their forest resources on Indian Reserve lands. There are two sections in the *Indian Act* that explain land title and forest resources: 1) Section 18, Reserves; and 2) Section 93, Removal of Materials from Reserves. Specific to property rights, Section 18, states “reserves are held by Her Majesty” and “lands in a reserve are used or are to be used for the use and benefit of the band,” (Department of Justice Canada 2012: R.S., c. I-6, s. 18(1)(2)). In other words, the Queen owns reserve lands but First Nation groups may live on reserves, and may use and benefit from reserve lands. In Section 93, Removal of Materials from Reserves:

A person who, without the written permission of the Minister or his duly authorized representative:

(a) removes or permits anyone to remove from a reserve

(i) minerals, stone, sand, gravel, clay or soil, or

(ii) trees, saplings, shrubs, underbrush, timber, cordwood or hay, or

(b) has in his possession anything removed from a reserve contrary to this section, is guilty of an offence and liable on summary conviction to a fine not exceeding five hundred dollars or to imprisonment for a term not exceeding three months or to both... (R.S., c. I-6, s. 93).

In Section 93, it allows Aboriginal groups to remove trees and timber with written

permission from the Minister of Aboriginal Affairs and Northern Development (Department of Justice Canada 2012: R.S., c. I 6, s. 93(a)(b)). To review, the requirement of Aboriginal groups to acquire written permission from the Minister acts as a barrier for Aboriginal groups who desire to harvest and benefit from timber extraction. It also does not explicitly address carbon. Section 18 should be updated to include the potential to extend to the management of forest carbon on reserve lands. As it is, Section 18 and 93 do not provide certainty for carbon rights for Aboriginals on reserve lands.

In Section 32, Sale or Barter of Produce, states that only in Manitoba, Saskatchewan, and Alberta are bands or members thereof allowed to sell plant and plant products from reserve lands with written permission from the Minister of Aboriginal Affairs and Northern Development, see quote below, (Department of Justice Canada 2012). Section 32. (1) states:

A transaction of any kind whereby a band or a member thereof purports to sell, barter, exchange, give or otherwise dispose of cattle or other animals, grain or hay, whether wild or cultivated, or root crops or plants or their products from a reserve in Manitoba, Saskatchewan or Alberta, to a person other than a member of that band, is void unless the superintendent approves the transaction in writing.

Exemption

(2) The Minister may at any time by order exempt a band and the members thereof or any member thereof from the operation of this section, and may revoke any such order...

(Department of Justice Canada 2012, R.S., c. I-6, s. 32).

Is it possible that this section may be challenged to include carbon as a product of a plant, which could provide certainty or written permission to the carbon rights in those provinces? However, Section 32 does not apply to BC Aboriginal groups so it cannot be challenged and is not relevant to this study (Government of Canada, 2013). The Indian Act does not address carbon rights on Indian reserve lands for Aboriginal groups.

The federal government developed the First Nations Land Management Regime in 1996 where an Aboriginal group can gain more control of reserve lands by developing their own laws for land designation, resources, environmental protection and matrimonial real property. After which, the Aboriginal group can opt out of 34 sections of the *Indian Act* including sections 18 to 29, sections 22 to 28, sections 30 to 35, sections 37 to 41, section 49, sub-section 50 (4), sections 53 to 60, section 66, section 69, section 71 and section 93. Thirty-five Aboriginal groups currently manage their reserves with First Nation Land Management and the Prime Minister recently is working on signing eight more onto this framework (Aboriginal Affairs and Northern Development, 2013). The focus for this land management framework was to develop more control on reserve lands and access to economic development for Aboriginals that apply for it. An Aboriginal group can make laws with respect to land and resources, except oil and gas, uranium radioactive minerals, fisheries, endangered species and migratory birds. Notably, carbon is not a resource that is listed on the exemption list of resources that an Aboriginal group can manage for under this framework (Aboriginal Affairs and Northern Development, 2013).

3.2.2 Post-treaty Aboriginal property rights

The property rights of post-Treaty jurisdiction apply to four finalized Treaties in BC: 1) Nisga'a; 2) Tsawwassen; 3) Maa-nulth; and 4) Sliammon. These Aboriginal groups "own their

lands in fee simple,” and have, “exclusive authority over their forest resources to determine, collect, and administer any fees, rents, and royalties” (Nisga’a Final Agreement pp. 31, 34, 73; Tsawwassen Treaty pp. 39, 43, 73; Maa-nulth Treaty pp. 23, 89; Sliammon Treaty, pp. 41, 97). One difference among these treaties is how forest resources are termed in the specific forest resource chapters. For example, the Nisga’a Treaty Agreement states “timber and non-timber forest products” instead of forest resources (Nisga’a Final Agreement p.73); the Tsawwassen and Sliammon Treaty Agreements state “all forest resources” (Tsawwassen Treaty p. 73, Sliammon Treaty p. 97); and the Maa-nulth Treaty Agreement states “forest resources and range resources” (Maa-nulth Treaty p. 89). These Aboriginal groups have clear and defined property rights through their respective treaties and may own a potential carbon offset project.

The Nisga’a Treaty states in Chapter 3 Lands:

Ownership of Nisga’a Lands

Section 3. On the effective date, the Nisga’a Nation owns Nisga’a Lands in fee simple, being the largest estate known in law. This estate is not subject to any condition, proviso, restriction, exception, or reservation set out in the Land Act, or any comparable limitation under any federal or provincial law. No estate or interest in Nisga’a Lands can be expropriated except as permitted by, and in accordance with, this Agreement... (Nisga’a Final Agreement, 1999, p.31).

Tsawwassen First Nation Final Agreement states in Chapter 4 Lands:

Tsawwassen Lands

Section 2. On the Effective Date, subject to clauses 10 and 11, Tsawwassen First Nation owns Tsawwassen Lands in fee simple, being the largest estate known in law. That estate of Tsawwassen First Nation is not subject to any condition, proviso, restriction, exception or reservation set out in the Land Act, or any comparable limitation under Federal or Provincial Law. No estate or interest in Tsawwassen Lands may be expropriated except as permitted by, and under, this Agreement... (Tsawwassen First Nation Final Agreement, 2007, p. 39).

The Maa-nulth First Nations Final Agreement states in Chapter 2 Lands:

Section 2.3.0 Ownership OF Maa-Nulth First Nation Lands

2.3.1 On the Effective Date, each Maa-nulth First Nation owns the estate in fee simple in its Maa-nulth First Nation Lands and such estate is not subject to any condition, proviso, restriction, exception or reservation under the Land Act... (Maa-nulth First Nations Final Agreement, 2009, p. 25).

The Sliammon Treaty Agreement states in Chapter 3 Lands:

Ownership of Tla'amin lands

Section 3. On the Effective Date, the Tla'amin Nation owns Tla'amin Lands in fee simple except for those lands identified as the Lund Hotel Parcels.

Section 4. The Tla'amin Nation's fee simple ownership of Tla'amin Lands is not subject to any condition, proviso, restriction, exception or reservation set out in the Land Act, or any comparable limitation under Federal or Provincial Law... (Sliammon Treaty Agreement, p. 41, Sliammon Treaty Society, 2013).

Upon the right conditions such as a feasible carbon project, if ecological conditions allow and the size of land base is amiable, then these four Aboriginal groups with settled treaties may expect to receive 100% of the revenue and benefits as carbon project owners. Their finalized treaties grant the four Aboriginal groups the municipal power, forest resource authority, and land ownership to put them in a good position to pursue carbon rights and benefits. However, there are no existing carbon projects on Treaty Settlement Lands (TSL) to date demonstrating how it may be accomplished.

3.2.3 Property rights for Aboriginal groups pursuing carbon programs through forest licences

In Luckert, Haley, and Hoberg (2011), the Crown forest tenure framework was reviewed for first, an understanding of tenure holder's rights, behaviours and responsibilities; and second, to inform the twelve attributes of Crown forest tenures (see Table 4 below). This framework is helpful in addressing my third research objective listed in Chapter 1 because it allows me to learn which attributes directly apply to carbon rights. Trees sequester carbon so it would seem relevant to combine timber and carbon rights into Crown forest tenure. An explanation of the 12

attributes is important to my study because the selected Aboriginal groups in my study are tenure holders or have tenures harvesting in their traditional territory and thus are subject to the rules that govern these leasing instruments. In addition, I used the comprehensiveness, exclusiveness, transferability, durability and renewability attributes of this framework to explore Crown forest tenure preferences related to carbon. This framework helped to provide the basis for a portion of my interview questions, (see Appendix A Interview Schedule).

Table 4: 12 Attributes of Crown forest tenures by Luckert et al, (2011). Four attributes from this framework are used as questions in my interview schedule.

	Attribute	Description
1	Initial allocation of tenure rights	How Crown forest tenures are awarded by the Crown through various types of bidding, direct award or application processes.
2	Comprehensiveness	The extent to which tenure grants rights to all the benefits flowing from an asset. The larger the number of rights granted, the more comprehensive the tenure.
3	Allotment type	Whether the rights granted are area based or volume based.
4	Size restrictions	The degree to which tenure is restricted in size in terms of area or volume.
5	Exclusiveness	The extent to which an individual or group is able to, or allowed to, keep others from accessing benefits from property rights.
6	Transferability	Whether, and under what conditions, tenure can be sold to a third party.
7	Export restrictions	Whether, and under what conditions, goods to which rights are granted can be sold internationally and/or inter-provincially.
8	Duration and renewability	The period which rights can be exercised and whether, and under what conditions, tenure can be renewed or replaced with a similar agreement.
9	Fiscal obligations	The disbursements, such as stumpage fees, land rents, user fees, and other charges, that tenure holders must make in order to exercise their rights.
10	Mill appurtenancy	Whether the wood harvested from tenure must, in whole or in part, be delivered to a designated mill.
11	Operational requirements and controls	Operational requirements refer to the various stipulations that property holders must meet in order to exercise and maintain their rights. In the case of forest tenures, requirements can be broadly classified into management and harvesting. Operational controls are measures designed to monitor the performance of tenure holders and enforce the requirements.

	Attribute	Description
12	Security, mutability, and compensation	Security refers to the confidence tenure holders have that governments will remain committed to honouring and protecting the rights granted. Mutability and compensation refer to the extent to which tenure can be legally modified or cancelled during its term and, in the event of such action, whether and how tenure holders are compensated.

3.3 Shared decision-making between Aboriginal groups and the provincial and federal governments in the forestry sector

3.3.1 Shared decision-making for Aboriginal groups without a treaty

There are two jurisdictions, i) reserve federal land and there is no consultation on this land and ii) Crown land which is provincial land. Shared decision-making is only relevant to Crown land and it would be shared decision-making with the provincial government.

There are currently four Aboriginal agreements in BC that have shared decision-making agreements and grants certainty for carbon rights on their traditional territories: Haida Reconciliation Protocol-Kunst'aa guu-Kunst'aayah (2009), Coastal First Nations Reconciliation Protocol (2010), Nanwakolas First Nation Reconciliation Protocol (2011), and Gitanyow Huwilp Recognition and Reconciliation Agreement (2013) (Ministry of Aboriginal Relations and Reconciliation 2013). All three agreements were negotiated as reconciliation, resource, and revenue-sharing protocols between Aboriginal groups and the provincial and federal governments. The provincial government has a hands-on role in the agreement and Canada, or the federal government, reserves the right to be included when necessary, such as when issues arise that pertain to them. All three Aboriginal agreements do not have settled treaties therefore these agreements are on Crown land. All three agreements consist of the following characteristics: i) Both parties (Aboriginal group[s] and Provincial government) agree on shared and joint decision-making for land and natural resources within the boundaries of the agreement;

ii) each protocol states that they will use a decision-making process, which they jointly develop with the provincial government to achieve their objectives, and most importantly, pursue carbon offsets. The decision-making model proposed in each of the protocols diligently describes how the parties will fairly negotiate decisions about land and forest resources; and iii) states objectives for each agreement (Ministry of Aboriginal Relations and Reconciliation 2011). The Crown thinks they own the land, and the Aboriginal groups involved in these agreements also believe they own their traditional territories because they did not concede.

Agreements can be made between one Aboriginal group and the Provincial government or between a network of Aboriginal groups and the Province. For instance, the Haida Reconciliation Protocol-Kunst'aa guu-Kunst'aayah only includes Haida Nation (Ministry of Aboriginal Relations and Reconciliation 2008). However, the Coastal First Nation Reconciliation Protocol includes six First Nations: Wuikinuxv Nation, Metlaktla First Nation, Kitasoo Indian Band, Heiltsuk Nation, Gitga'at First Nation and Haisla Nation (Ministry of Aboriginal Relations and Reconciliation 2008). Likewise, the Nanwakolas First Nations Reconciliation represents Mamalilikulla-Qwe'qwa'sot'em First Nation, Tlowitsis First Nation, Da'naxda'xw awaetlala Nation, Gwa'sala-'Nkwaxda'xw First Nation and K'omoks First Nation, (Ministry of Aboriginal Relations and Reconciliation 2011).

These Reconciliation Protocols outline shared decision-making for land and resources including carbon offsets, and provide certainty for Aboriginal groups without treaties to pursue a carbon offset project. These Reconciliation Protocols are advantageous for the Aboriginal groups involved because they are legislated and provide the authority to carry out their objectives and create revenue. An interesting characteristic of these agreements is that they may be

amended because the shared decision-making bodies have fulltime staff that report to their high representatives at periodic meetings (Ministry of Aboriginal Relations and Reconciliation 2011).

3.3.2 Decision-making for Aboriginal groups with a treaty

All treaty Aboriginal groups have exclusive rights to manage their landscape. In this context the provincial and federal governments no longer possess rights to decision-making on TSL. In Nisga'a Final Agreement (1999), it states in Chapter 11 Nisga'a Government, paragraph 1: "The Nisga'a Nation has the right to self-government, and the authority to make laws, as set out in this Agreement," (Nisga'a Final Agreement, 1999, p. 159). And in the Tsawwassen First Nation Final Agreement, it covers their authority and decision-making in three chapters, 6, 8 and 16.

In Chapter 6 Land Management:

Power to make laws

1. Tsawwassen Government may make laws in respect of: a. the creation, ownership and Disposition of a Tsawwassen Fee Simple Interest, (Tsawwassen First Nation Final Agreement, 2007, p. 63).

In Chapter 8 Forest Resources:

General

1. Tsawwassen First Nation owns all Forest Resources on Tsawwassen Lands and Other Tsawwassen Lands set out in Appendix E-2.

POWER TO MAKE LAWS

2. Tsawwassen Government may make laws in respect of the management of Forest Resources on Tsawwassen Lands, (Tsawwassen First Nation, 2007, 73).

In Chapter 16 Governance:

Tsawwassen First Nation self-government

1. Tsawwassen First Nation has the right to self-government, and the authority to make laws, as set out in this Agreement.
2. Tsawwassen Government, as provided for under the Tsawwassen Constitution and this Agreement, is the government of Tsawwassen First Nation.
3. The rights, powers, privileges and authorities of Tsawwassen First Nation will be exercised in accordance with Tsawwassen Laws, including the

Tsawwassen Constitution, and with this Agreement, (Tsawwassen First Nation, 2007, 159).

In Maa-nulth First Nations Final Agreement, there are two chapters that address decision-making, 9 and 13:

In Chapter 9 Forest Resources:

9.1.0 Forest and range resources on Maa-Nulth First Nation lands

9.1.1 Each Maa-nulth First Nation owns the Forest Resources and Range Resources on its Maa-nulth First Nation Lands.

9.1.2 Each Maa-nulth First Nation, as owner, has exclusive authority to determine, collect and administer any fees, rents or other charges, except taxes, relating to the harvesting of Forest Resources or Range Resources on its Maa-nulth First Nation Lands.

9.2.0 Law-making

9.2.1 Each Maa-nulth First Nation Government may make laws in respect of Forest Resources, Forest Practices and Range Practices on the Maa-nulth First Nation Lands of the applicable Maa-nulth First Nation.

9.2.2 Federal Law or Provincial Law prevails to the extent of a Conflict with Maa-nulth First Nation Law under 9.2.1.

9.3.0 Manufacture and export of timber resources

9.3.1 Timber Resources harvested from Maa-nulth First Nation Lands are not subject to any requirement under Provincial Law for use or manufacturing in British Columbia.

9.3.2 Logs from Maa-nulth First Nation Lands may be proposed for export pursuant to Federal Law and policy as if the logs had been harvested from an Indian Reserve in British Columbia.

In Chapter 13 Governance:

13.1.0 Maa-nulth First Nation governance

13.1.1 Each Maa-nulth First Nation has the right to self-government, and the authority to make laws, as set out in this Agreement.

In Sliammon First Nation's treaty titled Tla'amin Final Agreement (2011), Chapter 8 and 15 address decision-making:

Chapter 8 Forest resources

1. On the Effective Date, the Tla'amin Nation owns all Forest Resources on Tla'amin Lands.
 2. Tla'amin Lands will be treated as Private Lands for the purposes of Provincial Law in relation to Forest Resources, Forest Practices and Range Practices.
 3. The Tla'amin Nation, as owner, has the exclusive authority to determine, collect and administer any fees, rents, stumpage or charges, other than taxes, relating to Forest Resources on Tla'amin Lands.
 4. The Tla'amin Nation may act through Tla'amin Government in exercising its authority under paragraph 3.
- Law-making
5. The Tla'amin Nation may make laws in relation to Forest Resources, Forest Practices and Range Practices on Tla'amin Lands.

Chapter 15 – Governance

Tla'amin self-government

1. The Tla'amin Nation has the right to self-government, and the authority to make laws, as set out in this Agreement (Tla'amin Final Agreement, 2011).

In summary, there are three levels of Aboriginal decision-making exercised in BC for carbon rights or potential carbon rights. The Aboriginal groups without a treaty in BC that would like to pursue potential carbon on reserve lands have, on one hand, no shared decision-making under the Indian Act because they need to request written permission from Minister of Aboriginal Affairs and Northern Development. On the other hand, after they do get written permission they do not own the land with the rest of the province and there is no need for shared decision-making. Special cases include the tribes without a treaty but who are a part of the Haida Reconciliation Protocol-Kunst'aa guu-Kunst'aayah, Coastal First Nations Reconciliation Protocol and Nanwakolas First Nation Reconciliation Protocol and have 50/50 shared decision-making and interestingly, 50/50 revenue-sharing after costs with the provincial government. Lastly, the Nisga'a, Tsawwassen, Sliammon and the five Maa-nulth Nations have specific legislation in place through their treaties that allows them to make their own decisions on land

and resource management, but their practices still have to adhere to federal and provincial laws on lands and resources, i.e. the *Forest Act*.

Chapter 4: Results

In this chapter, I perform a comparative analysis of the results from my visits to five case study communities in order to address the three research objectives listed in Chapter 1. This chapter will discuss the following topics:

- Aboriginal Criteria related to forestry in the following subject areas: cultural, environmental, economic and social;
- Aboriginal communities' awareness of forest carbon management;
- Preferences for forest-based project themes;
- Preferences for Improved Forest Management methods and activities;
- Preferences for contractual arrangements using carbon relevant attributes from the Crown forest tenure framework (Luckert et al, 2011);
- Preferences on carbon buyers;
- Awareness of other interests in a carbon offset project.

4.1 Identifying criteria used by participating Aboriginal groups to evaluate potential forest carbon offset projects

In individual interviews, I asked participants open-ended questions about what cultural, environmental, economic, and social values related to the forest which is the most important to them. I transcribed each interview word-for-word and made a list of the prioritized values for each category of cultural, environmental, economic and social. These lists had some recurring examples across the five selected cases. Next, I grouped the lists into themes within each of the four categories. I created tables that listed the identified values for each category that also showed which theme was listed by each anonymous Aboriginal group. After organizing the

identified values in tables across the five Aboriginal groups, I was able to see which values had a low, medium and high consensus among the cases. I organized the tables according to the level of consensus each theme had in each category of cultural, environmental, economic, and social.

The Tables 5-10 below display the prioritized values listed by the five selected Aboriginal groups. Tables 5-10 are organized to have five columns representing each of the anonymous Aboriginal groups labeled as A, B, C, D and E. These columns will provide a checklist of which values were listed as a priority by Aboriginal groups. If there is a Y in the tribe label columns, then it indicates yes it was listed by one or more interviewees at that particular Aboriginal group. A blank in these columns indicates that that particular value was not stated by any of the four Aboriginal group's interviewees. Tables 5-10 only represent values listed at the group level, therefore consensus means group-to-consensus.

My results and analysis are my interpretation of the interview data that I collected as an Aboriginal forester researcher.

4.1.1 Cultural criteria identified by the five selected Aboriginal groups

I grouped the values into themes. Table 5 summarizes in no particular order a list of the cultural themes that are considered a priority. Ten cultural themes were listed by all five Aboriginal groups. They listed this in their data. The numbers in the left column are from the original list of criteria.

Table 5: Summarized cultural themes noted by all five Aboriginal groups, i.e. full consensus group-to-group.

	Cultural Themes	A	B	C	D	E
1	Culturally significant sites protected	Y	Y	Y	Y	Y
2	Non-timber forest products (NTFP) i.e. edible and medicinal plants	Y	Y	Y	Y	Y
3	Subsistence i.e. hunting deer for food	Y	Y	Y	Y	Y
4	Culturally important species including availability and access	Y	Y	Y	Y	Y
5	Fish resources, fishing licences, fish hatchery, Headlease (commercial shellfish such as clams, oysters, gooeyducts)	Y	Y	Y	Y	Y
6	Rituals, i.e. burial, coming of age; includes using Western red cedar	Y	Y	Y	Y	Y
7	Spirituality, i.e. holistic connection, protection, spiritual laws, meditation,	Y	Y	Y	Y	Y

	Cultural Themes	A	B	C	D	E
	cleansing; includes using Western Red Cedar					
8	Language and culture strengthened, i.e. teachings, traditional song and dance, contemporary vision quests	Y	Y	Y	Y	Y
9	Forest wildlife and wildlife habitat	Y	Y	Y	Y	Y
10	Decision-making involvement	Y	Y	Y	Y	Y

All five selected Aboriginal groups said it was a prioritized value to maintain traditional, cultural activities with an emphasis on resource use of land, NTFP, trees, fisheries and shellfish, i.e. active practice of cultural use of land and its bounty.

Decision-making involvement also had a full consensus. My interpretation of this particular theme is the priority to restoring autonomous power over their traditional forest lands. Table 6 below summarizes cultural criteria listed with a high consensus across the five selected Aboriginal groups.

Table 6: Summarized cultural themes noted by a majority of the five selected Aboriginal groups, i.e. high consensus group-to-group.

	Cultural Themes	A	B	C	D	E
1	Forest access for cultural uses continued	Y	Y		Y	Y
2	Multi-aged stands i.e. Cedar bark stripping for now and future	Y	Y			Y
3	Forest resources available for future generations	Y	Y		Y	Y
4	Cooking and traditional foods (includes food security)	Y	Y	Y	Y	
5	Art and crafts, i.e. totem poles, carving, basket weaving	Y	Y	Y	Y	
6	Utility, i.e. canoes, BBQ sticks for fish on open pit fire, paddles, longhouse, clothing, containers	Y	Y	Y	Y	
7	Old growth forest values	Y	Y		Y	Y
8	Traditional forest/nature harvesting laws, i.e. Hiotly-based logging ²		Y	Y	Y	Y
9	Community plans for looking after the lands including maps	Y		Y	Y	Y

There is a high consensus across the five selected Aboriginal groups for identifying the very broad use of wood for a variety of culturally important activities such as fire based traditional cooking methods, large scale and small scale crafts; totem poles, weaved baskets and

² Hiotly-based logging refers an Aboriginal traditional system of logging passed down from ancestors.

utility items, i.e. canoes and longhouse. Another interpretation from this table is the management of the forest to provide access and availability of the materials needed for this wide variety of cultural uses was noted in numerous other values.

Table 7 below lists the cultural criteria that had a low consensus across the five selected tribes. These criteria are important, but are Aboriginal group specific.

Table 7: Summarized cultural themes noted by only a few of the five selected Aboriginal groups, i.e. low consensus group-to-group.

	Cultural Themes	A	B	C	D	E
1	Beaches for harvesting shellfish/aquaculture	Y		Y		
2	Pride of lands	Y				
3	Practice Aboriginal rights	Y				
4	Access to traditional harvesting for culture on Crown land	Y	Y			
5	Elder's resources, i.e. Forest and Range Opportunities initiative funded a salary for Hereditary Chief body		Y			
6	Communication with other First Nation communities			Y		
7	First Nation agreement/protocol with other nations for trade			Y		
8	Live together as a community, i.e. bring people home			Y		

The themes in Table 7 were specific to one or two Aboriginal groups based on current Aboriginal concerns or initiatives. These themes ranged from communication with other Aboriginals, Elder resources, and concerns related to access to beaches.

I will now discuss in more detail some of the key values and contextual information that came out in this section of the interviews. For example, protection of archaeological sites is important for Aboriginal groups because these sites are important both from a preserving cultural identity standpoint as well as their instrumental role in proving land claims. Other values that Aboriginal groups want protected in the forest are culturally significant forest species. Aboriginal groups want to protect their forest resources for present and future generations, and ensuring the future availability of species that have culturally significant traditional uses is a central objective in that. Aboriginal groups have specific forest areas and historic burial sites

that are untouched and Aboriginal groups want them to remain in an untouched state. In other areas my selected Aboriginal groups want to protect their forests from resource depletion and degradation.

All Aboriginal groups outlined how full access to the local forest is an important priority. They do not want to be restricted from their forest land in any way, i.e. a physical barrier or a written law. A full consensus across the five Aboriginal groups indicated they were concerned about access to the forest and forest resources for harvesting of timber and NTFPs throughout the year for many different purposes. The forest is used as a place for spirituality, subsistence and recreation. It is important to Aboriginals to be able to continue to access the forest at different times of the year because they want obtain a variety of products from seral stages of plants and trees. For instance, timber and NTFPs are needed for community wide cultural events as they arise, such as a burial of a community member.

Cultural practices related to the forest are carried out by Aboriginals individually and collectively, harvesting for timber for art as a cultural practice and for employment. Aboriginals individually or in family groups practice traditional cooking methods to preserve food for the winter season. Timber is harvested collectively for community purposes for totem poles, firewood and canoes. NTFPs are harvested individually and collectively for art, crafts, food, medicines, spiritual ceremony, and traditional clothing for song and dance. Some Aboriginals harvest NTFPs for commercial purposes such as wild mushrooms and Salal. Such harvests provide seasonal employment. Forests are important for cultural practices and employment.

During interviews, all five Aboriginal groups emphasized the priority of being involved in the decision-making process of forest resources and activities because of their connection to the forest. For example, they want to be included in the planning stage and they want to be

consulted with in a respectful manner. It is also a priority that their feedback and input are taken seriously when they are consulted.

4.1.2 Environmental criteria identified by the five selected Aboriginal groups

Table 8 summarizes the prioritized environmental themes identified by the five Aboriginal groups. The themes are listed in this table in order from high consensus to low consensus group-to-group.

Table 8 Environmental themes identified by the five selected Aboriginal groups

	Environmental Themes	A	B	C	D	E
1	Biodiversity, i.e. intact forest	Y	Y	Y	Y	Y
2	Clean environment	Y	Y	Y	Y	Y
3	Water quality and protection of water, i.e. watersheds, stream-keeping	Y	Y	Y	Y	Y
4	Sustainable resource use	Y	Y		Y	Y
5	Forest health, i.e. manage for insect and disease	Y	Y		Y	Y
6	Minimal timber harvesting, or no logging		Y	Y	Y	Y
7	Natural Disturbances, i.e. to mimic natural disturbances (landslides)			Y		Y
8	Endangered species in traditional territory	Y				
9	Invasive species in territory, i.e. mitigation and removal	Y				

The top three listed themes in the table above had a full consensus across the five Aboriginal groups. During interviews it was said that maintaining these three themes was a priority: clean, bio-diverse, water quality and protection of water.

During interviews, it was said that having a clean forest was a priority. Interview participants believe that all parts of the ecosystem are related and it will all be affected if it was negatively impacted by pollution. Native species and having the forest as natural as possible are priorities so keeping the forest clean is important. For example, one interviewee said when he was a child his parents use to make him collect fresh water from a certain stream and carry it back to their house; and they all use to bath in it, but now that stream has been degraded and is not clean to drink water from or bath in. This example is related to the following theme with a full consensus, water quality. Water quality was listed as a priority because it affects fish,

wildlife and people. Forest practices that protect riparian areas are important to Aboriginal groups, especially when past logging has contributed to instable terrain and landslides impacting streams. Aboriginal groups with water quality issues are interested in restoration and riparian enhancement.

Biodiversity as a prioritized value was listed by all five Aboriginal groups. During interviews it was said that all trees, plants and living organisms have a right to live and they all play an important role in the forest. It was also said that it is important to keep the forest intact with native species. My selected Aboriginal groups have a holistic view of the forest and strong ecological integrity. Interestingly, four out of five Aboriginal groups said they are interested in minimizing their timber harvesting because it is their view that this will support biodiversity.

The majority of the cases (80%) identified practicing sustainable resource use as an environmental priority, while a level of timber harvests that is lower than normal, would ensure healthy forests with a preference for less harvesting.

Selected Aboriginal groups indicated that bio-mimicry, i.e. emulating natural disturbance regimes, was important while others were concerned about: protecting endangered species, removing and preventing the additional of invasive species, or mitigating the impact of landslides. The low consensus values are a reflection of what each tribe is currently dealing with in their territory, and I consider them to be Aboriginal group specific forestry-environmental issues.

4.1.3 Social criteria identified by the five selected Aboriginal groups

Table 9 below summarizes in no particular order a list of the social themes that ranged from high to low consensus across the five selected Aboriginal groups.

Table 9: Social criteria identified by the five selected Aboriginal groups.

	Social Themes	A	B	C	D	E
1	Job creation	Y	Y	Y	Y	Y
2	Social events i.e. youth camps, group trips to distance territory locations, Elders weekly luncheon	Y	Y	Y	Y	Y
3	Community consultation event/process	Y	Y	Y		Y
4	Support existing programs run by band for membership, ie. housing program, employment training programs, capacity building, daycare program	Y		Y		Y
5	Programs and services increased	Y	Y	Y		
6	Community acceptance (Informal/Formal)	Y		Y		Y
7	Lobby for tenure reform to reflect our nation's needs		Y			
8	Community Infrastructure/Buildings		Y			
9	Amenities: running water, drinking water, sewer, wastewater, electricity		Y			

Two social themes had a full consensus. Job creation and social events were important themes to all Aboriginal groups. There are social programs and services provided to community members that are funded to each of the Aboriginal groups by AAND. Although each program manager or coordinator in each Aboriginal group is responsible for their own program content and deliverance, these programs are highly utilized and valued, i.e. social housing program, daycare program, cultural activities and employment program. These programs and services are available to all individual members based on need. Organized group activities such as youth summer camp or weekly Elder's luncheons provides an opportunity for community members to interact with each other and does not cost them money to participate. Aboriginals are interested in increasing the number of programs and services to their members, especially if they are cultural or recreational types of social activities. Job creation was also noted by all Aboriginal groups and this will be discussed more in the section on Economic themes but it is interesting to note that it did come up as a social theme. My interpretation on this theme is that many Aboriginals rely on Chief and Council to create jobs for community members exemplified by each group having an economic development department.

Two other themes that are very close to each other were also identified with a high consensus, informal and formal community acceptance. Informal community acceptance was listed by three groups, and formal community consultation was listed as a separate value by four Aboriginal groups as being important internally to Aboriginal groups. One example was explained by one interviewee that he does not want community protests from membership and preferred to use a formal, unbiased mechanism for reaching a consensus called a voting referendum.

4.1.4 Economic criteria identified by the five selected Aboriginal groups

Table 10 summarizes in no particular order a list of the economic themes that are a priority. This table summarizes economic themes that ranged from high to low consensus across the five selected Aboriginal groups. Four economic themes had a full consensus group-to-group.

Table 10: Economic criteria identified by the five selected Aboriginal groups.

	Economic Themes	A	B	C	D	E
1	Timber harvesting (including forest tenures, wood products)	Y	Y	Y	Y	Y
2	Revenue generated	Y	Y	Y	Y	Y
3	Recreation values, leisure activities, tourism, VQOs	Y	Y	Y	Y	Y
4	Natural Resource research & development i.e. hydroelectric projects, restoration projects	Y	Y	Y	Y	Y
5	Harvest non-timber forest products/botanical products for commercial sale	Y	Y		Y	
6	Greenhouse gas emission reduction values		Y			Y
7	Revenue sharing with band members i.e. \$ distribution	Y				
8	Resources below ground	Y				
9	Ecosystem service fees		Y			
10	Poaching issues addressed i.e. commercial trees harvested for firewood				Y	

Timber harvesting was identified to have an important role in generating revenue for each Aboriginal group. Aboriginals want to have economic self-reliance by using the resources of the land. It was recognized that groups need natural resource research and development in order to become financially independent from the government, namely Aboriginal Affairs and Northern Development and most importantly the *Indian Act*. Interviewees said that their forestry

departments already use or plan to use of all the forest values for financial stability, and not just harvesting the commercial timber as a resource. It was a full consensus across the Aboriginal groups that they used the forests and lakes in their traditional territories for recreation and leisure activities. All Aboriginal groups said visual quality objectives (VQO) were important and they did not like seeing clearcuts or timber harvesting during their recreation and leisure activities. There was a high consensus and interest in new non-extractive sources of forest revenues such as carbon sequestration and NTFPs. Individual Aboriginal groups noted themes on below ground resources, ecosystem service fees and timber poaching. The low consensus themes are important to each individual tribe that listed them. It was a reflection of what they have personally experienced or an on-going concern that they are currently dealing with.

4.1.5 Criteria summary

All five selected Aboriginal groups are struggling with balancing economic and environmental themes, and often are looking to traditional values and operations to point the way towards resolving this struggle looking at all the theme tables. During interviews, respondents provided examples for cultural, social, and environmental values and they often overlapped with each other. Cultural, social, and environmental values were closely related to each other and were preferred over economic values. There was recognition of the importance of generating revenue and creating employment from forest resources. This struggle to balance their cultural, environmental and social values versus economic values highlights the need for stable interim land use agreements; for example, long term treaties or reconciliation agreements, with access and control of the land base for Aboriginal groups.

Timber harvesting generates revenue therefore, their forest licences are important to them. Some of these selected Aboriginal groups rely heavily on their forest licences as an

income to support their community programs, services and infrastructure. Some of these selected Aboriginal groups are interested in a carbon offset project so that they could minimize their existing timber harvesting volumes while they are still generating revenue. It was said by all Aboriginal groups that generating revenue is important.

Harvesting of non-timber forest products and/or botanical products for commercial sale provides seasonal employment for individual members, such as arts and crafts, berry picking, mushroom picking or Salal harvesting.

Generating revenue and making a profit with all available economic development entities owned by the Aboriginal group is a high priority. AAND funding is limited and it comes with very narrow guidelines for its use, therefore, the ability to generate revenue independent from AAND funding for the Aboriginal group is a high priority. The five Aboriginal groups are at differing levels of natural resource development, but they all recognize the importance to diversify their community economic development, i.e. they try to use what is available to them in their respective territories. All participating Aboriginal groups want to diversify their economic development and are engaging in opportunities as they arise, such as research projects with universities. One Aboriginal group has a micro-hydroelectric project that generates revenue for them. Another Aboriginal group has a hydroelectric project transmission line crossing their territory and this generates revenue too through royalties. A third Aboriginal group is in the planning stages with a third party to have their hydroelectric project's transmission line constructed through a parcel of their land. The last two Aboriginal groups are interested in natural resource activities that would promote or support environmental restoration.

The selected Aboriginal groups want their forests to have good aesthetics for recreation, leisure, and tourism; especially, when they participate in back country related recreation and

leisure activities. Aboriginals are aware of the importance to manage for VQOs for stakeholders in their local areas. For instance, one of the selected Aboriginal groups is located in an area where tourism is the principal economic driver.

4.2 Aboriginal awareness of forest carbon benefits

The five selected Aboriginal groups in this study are at different stages of looking at carbon offsets as a new, potential forestry activity to add to their economic development portfolios. To summarize my interpretation of the five Aboriginal group's awareness of forest carbon benefits, I created a scale in Table 11 based on each of my Aboriginal group's experience or implementation efforts with carbon offsets. The Number of Aboriginal group's column in Table 11 anonymously lists how many Aboriginal groups are at each level. The Level of Awareness column is the scale from very low to very high. The Scale of Awareness Description column describes what the Level of Awareness column represents. In the Level of Awareness column there is a level called "Very Low." This level means that a tribe is not aware of terminology that carbon offset projects are based on, i.e. understanding of baseline and additionality were asked in the interview schedule. In the "Low" Level of Awareness, tribes understand baseline and additionality. In the "Medium" Level of Awareness, tribes have an understanding of baseline, additionality and PDD. In the "High" Level of Awareness, tribes understand baseline, additionality, project risks, impacts to forest licences, i.e. longer rotation means less harvesting therefore less timber revenue being generated. In the "Very High" Level of Awareness, tribes have the skill set to complete a PDD within their forestry department.

Table 11: Level of Awareness scale

# of Aboriginal groups	Level of Awareness	Scale of Awareness description
1	Very Low	Do not understand baseline and additionality.
1	Low	Understand baseline and additionality.

# of Aboriginal groups	Level of Awareness	Scale of Awareness description
0	Medium	Understand baseline, additionality and PDD.
2	High	Understand baseline, additionality, PDD, project risks and benefits, carbon feasibility study completed.
1	Very High	The skill set to complete a PDD within their forestry department.

4.2.1 Very low level of awareness

There is one Aboriginal group in the Very Low Level of Awareness because they were not aware of baseline and additionality terminology related to forest carbon management. This Aboriginal group is in the early stages of a carbon feasibility study that will determine if their proposed project site will be favourable for a project. Although this Aboriginal group has a low level of awareness, they are interested in learning more about forest carbon management.

4.2.2 Low level of awareness

There is one Aboriginal group in the Low Level of Awareness. Although they understand some terminology and some of the process of bringing carbon to market for sale, this Aboriginal group does not fully understand forest carbon, i.e. when they described additionality they described leakage. However, they are aware that a carbon offset project involves: evaluation, annual evaluation, reporting, mapping, an economic impact to the logging revenue, and community acceptance. During interviews this tribe discussed baseline as their forest licence and stated that it is what they would harvest traditionally. They also would prefer a carbon offset project that would allow them to use a harvesting method that is a lower impact on the forest, and would enable them to use techniques that are from their First Nation traditional laws. They feel very strongly about including value-added forest products in their carbon offset project. They believe that a carbon offset project would not have any trade-offs. Their

perception of carbon offsets is based on keeping trees standing. They would like to scrap logging altogether or reduce it to very, very minimal logging activity. If they were to pursue a carbon offset project they would specifically like the following forest management: 100 metre riparian buffer zones on streams; longer rotation period; stop logging Western red cedar (*Thuja plicata*); project site located in a park; non-extraction forestry for generating revenue; and for the project site to be aesthetically pleasing.

4.2.3 Medium level of awareness

There are no Aboriginal groups in my study that ranked at this level.

4.2.4 High level of awareness

Two Aboriginal groups have a High Level of Awareness. The first Aboriginal group has a High Level of Awareness about carbon offsets because they have completed a carbon feasibility assessment. Their forest manager identified and confirmed that they do not have enough landbase of hectares to support a carbon offset project. For example, they will not generate enough carbon credits to break-even and cover the expenses for the annual certification costs. This Aboriginal group's High Level of Awareness may be due to having a Registered Professional Forester on staff as their forestry manager. In their feasibility study they chose the conservation type of forest carbon offset project. They said it was their objective to overlap the carbon project with their culturally important sites for a form of protection. This Aboriginal group's forest manager understands forest carbon management. There are two main concerns that the forest manager has about carbon offsets. The first concern is having a natural disaster wipe out the carbon project area and then having to give back the money back. The second concern is finding a buyer. This Aboriginal group currently has a joint venture with the local municipality on a Community Forest Licence and they realize it may be possible to have a

potential carbon offset project with their Community Forest Licence. However, the leaders of this Aboriginal group said they are not exploring this as an option. They are said they are assessing the costs and benefits of partnering with neighbouring Aboriginal groups on a joint carbon offset project. My interpretation of this Aboriginal group's main theme of their perception about forest carbon management is that they could also use it as a conservation strategy and protection strategy of certain areas. For example, they discussed that they would like to conserve the land around a river that is important to them. And, it is also a priority to conserve and protect their ancient burial sites. Plus, other important sites that have not been disturbed that they would like to conserve and leave untouched. During interviews, one respondent was concerned that committing to carbon project would restrict their tribe from future development? Another question from a different respondent was, "would the carbon project would lock up their land for the long term and restrict them from pursuing something else in the future?" A third respondent perceived that "there are no risks in leaving an area untouched so there wasn't anything to be worried about."

The second Aboriginal group in this study that also ranked a High Level of Awareness is currently in the process of submitting a PDD for a conservation type of forest carbon project. At the time of the interviews they have completed the validation and verification phases; also, they have been waiting for one year for the Minister of Aboriginal Affairs and Northern Development to state in writing that they own the trees and they are granted the carbon rights, thereby are the owners of carbon credits. Their carbon project situation includes a partnership with a company. This Aboriginal group discussed basic terminology and concepts of carbon offsets early in their interviews, such as in the criteria section above. The Aboriginal group understands over the long term a carbon offset project will increase their Annual Allowable Cut, but there will be a loss of

timber supply within the next 20-50 years from leaving a stand beyond the point of its regular 80 year harvest rotation schedule. They understand that a cutblock or a proposed project area will need to be free-to-grow before intensive silviculture activities can be planned. This Aboriginal group has an environmental management plan that they follow, which includes all their cultural and community values and objectives. One strategy in their environmental management plan that is particularly interesting is a habitat compensation strategy which is a strategy that I have seen in the construction engineering industry. This Aboriginal group has been included in higher level planning stages such as being consulted by the provincial government and industry in all forestry and economic development activities in their traditional territory. This Aboriginal group has a forestry agreement that is unique and is one of two agreements that exist in Canada. The scope of the agreement is for protection of a cultural sacred area in a timber supply area on Crown land. They are looking to have their carbon offset project overlap with three important site specific areas: i) salmon habitat for increased riparian protection; ii) Old Growth Management Areas because they value Old Growth forests; and iii) cultural important sites for protection. This Aboriginal group feels very strongly about using a carbon offset project to help protect and restore cultural important sites. They are aware that a carbon industry is not a significant revenue stream right now but they are interested in pursuing it because it can help build capacity within Aboriginal group membership. The only work step left to complete in their PDD at the time of the interviews is proof of land ownership, which they are currently trying to address. Once they have a written permission from the Minister of Aboriginal Affairs and Northern Development then they can submit their carbon project application and enter the carbon market.

4.2.5 Very high level of awareness

One Aboriginal group in this study has a Very High Level of Awareness because they have the experience of completing a PDD from their forestry department, for example this Aboriginal group's forestry department consultant services include PDD. Another reason they have a Very High Level of Awareness is because they have been collecting carbon measurements on their reserve lands for a number of years by one of their foresters. They have four forestry professionals on staff that enables them to have the capacity to be hired as forest carbon consultants. During interviews, it was said they were interested in more than one type of carbon project, such as combining different types. The first example they discussed was about a deciduous stand that use to be coniferous, and they would like to convert it to back. Second, they have a non-forested area that they would like to forest. Third, they would like to protect areas and conserve them. Fourth, they would like to increase retention for Improved Forest Management such as increase riparian buffer zones around their streams in their watershed. The Aboriginal group's traditional territory has been negatively impact by past logging practices and now they have to manage for terrain instability and have issues of landslides. The landslides have negatively impacted their streams and salmon stocks, and this Aboriginal group's forestry department is interested in addressing this issue. Their forest land is in a remote location with steep terrain which leaves them with high forest operating costs. Although this Aboriginal group is pre-Treaty they bought and own 280 hectares of fee simple lands in their traditional territory. They have also bought all the different forest licences in their traditional territory so they are the only tenure holder harvesting in their forests. They have a watershed management plan that they developed for their forest land and it incorporates their Aboriginal values and cultural uses of

their land. This Aboriginal group has the highest level of awareness of carbon offsets amongst the five Aboriginal groups in this study.

4.3 Preferences for forest-based project types group-to-group

There are several types of carbon offset projects but my study has focused on Pacific Carbon Trust forest-based projects. It is the only one that includes forestry. There are four different sub-types of Pacific Carbon Trust forest-based projects: Afforestation, Reforestation, Improved Forest Management and Conservation/Avoided Deforestation. The following graphs show the number of times each sub-type was selected among the four interview respondents at each Aboriginal group. Some respondents only choose one sub-type and some respondents choose two or more sub-types that they deemed acceptable. The following graph summarizes all five Aboriginal group's preferences for sub-types of Pacific Carbon Trust forest-based projects.

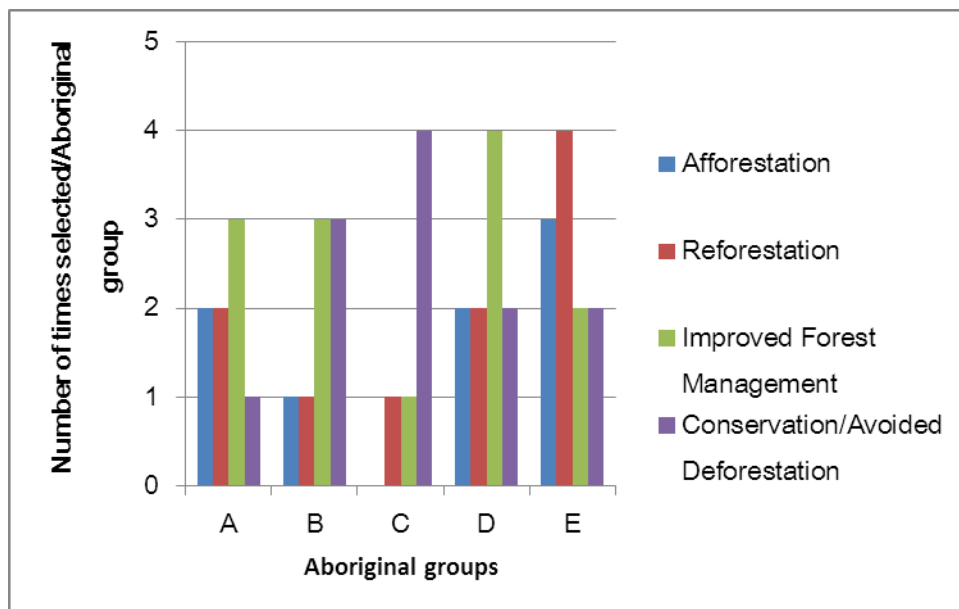


Figure 2: Preferences identified by the five selected Aboriginal groups for sub-types of Pacific Carbon Trust forest-based projects.

This figure shows little consensus across the five Aboriginal groups on types of projects. This illustrates the heterogeneity of different groups based on a few different factors such as land and forest types, limitations of current land use agreements and treaty status, and forest land degradation due to past forest practices. Some groups focus on only one of these types and others look to practice a number or all four of these practices.

4.3.1 Aboriginal group A's preferences for forest-based project types

Aboriginal group A has the most preference for Improved Forest Management. Aboriginal group A's territory is second growth forest so this may related to why their respondents favoured Improved Forest Management more than Conservation/Avoided Deforestation. Their archaeological sites are documented, registered and they have existing agreements with the government to help protect those archaeological sites. Aboriginal group A feels very strongly about meeting their community economic objectives.

4.3.2 Aboriginal group B's preferences for forest-based project types

Aboriginal group B has the most preference for two different projects, Improved Forest Management and Conservation/Avoided Deforestation. They would like to potential pursue Improved Forest Management on a large jointly-owned forest licence, and Conservation/Avoided Deforestation on their culturally sensitive sites in their traditional territory. Aboriginal group B feels very strongly about protecting their old growth forests. They are actively involved in researching alternative economic revenue streams that will allow them to minimize their logging activity.

4.3.3 Aboriginal group C's preferences for forest-based project types

Aboriginal group C has the most preference for Conservation/Avoided Deforestation. All four interview respondents chose Conservation/Avoided Deforestation. This Aboriginal group is

concerned about increasing their level of protection on their burial sites because they were not able to negotiate and include their ancient burial sites in their current land agreement. Aboriginal group C chose to negotiate 80 kilometers of waterfront property for economic development objectives such as resort development, ecotourism and recreation opportunities. Alternatively, this Aboriginal group negotiated Woodlot tenure on their ancient burial site and a foreshore shellfish lease on the beaches surrounding this particularly important burial site.

4.3.4 Aboriginal group D's preferences for forest-based project types

Although Aboriginal group D has the most preference for Improved Forest Management, their carbon offset application in progress is for a Conservation/Avoided Deforestation project. Aboriginal group D is interested in the Improved Forest Management silviculture activities as a way of employing more community members, and as a way of increasing their Annual Allowable Cut over the long term, i.e. the silviculture treatments will add more volume to their trees.

4.3.5 Aboriginal group E's preferences for forest-based project types

Aboriginal group E has the most preference for Reforestation. They feel very strongly about addressing the terrain stability issues in their forest land because failure to do so leaves the lands inoperable. This is a current issue. Their forest land is in a remote location that is a boat ride away from their residential area. The post-slide areas are very steep. These two characteristics provide Aboriginal group E with forest operation challenges. The history and state of their forests have them looking towards Reforestation as their best alternative. Slides from past, industrial logging activity has negatively impacted their salmon habitat and salmon stocks and they would like to reverse these effects.

4.4 Preferences for Improved Forest Management methods and activities

Improved Forest Management has three different methods that can be used to achieve GHG emission reduction and/or increase GHG carbon sinks: i) increase sequestration rates, ii) reduce emissions, and iii) increase long-term carbon storage in forests and wood products. Table 12 lists and describes the eligible management methods and activities of Improved Forest Management (FCOP, 2011). The numbers and letters for methods and activities in this table correspond with the numbers and letters in Figures 3-7.

Table 12: Methods and stand tending activities for Improved Forest Management described in BC Forest Carbon Offset Protocol. The numbers and letters for methods and activities in this table correspond with the methods and activities in Figures 3-7.

Method Number	Improved Forest Management Method	Example of stand tending activity
1.	Increase sequestration rates:	a) Fertilization
		b) Improving stocking, i.e. increasing the number of trees planted
		c) Reducing regeneration delays, i.e. Forest Practices Code states that licensees have one year to re-plant a harvested cutblock, but this technique will allow the harvested cutblock to be planted before one year.
		d) Use of faster growing trees/seeds, i.e. change in species (Red Alder), change in genetics (vibrant Red Cedar seeds selected from different ecotype in BEC)
		e) Thinning disease and suppressed trees, i.e. removing trees that have root rot or forked tops.
		f) Managing competing brush, i.e. brushing salmonberry or weeds
		g) Short-lived forest species, i.e. Christmas trees, deciduous species
2.	Reduce emissions:	a) Capturing mortality, i.e. removing dead and dying trees
		b) Reducing natural disturbances, i.e. techniques that help mitigate or manage windthrow (feathering tree edges to mitigate windthrow); fireguard
		c) Reducing burning, i.e. reduce prescribed burns, reduce slashpile burning
		d) Reducing new road widths, i.e. less road building
3.	Increase long-term carbon storage in forests and wood products:	a) Conservation areas
		b) Reduced harvesting through forest cover constraints
		c) Increasing proportion of long lived harvested wood products in conjunction with other changes in forest management.

The five selected Aboriginal groups were asked which methods and stand tending activities listed in Table 12 were acceptable. Figure 3 provides an overview of preferences for Improved Forest Management methods and stand tending activities at the group level. There were both consensus and variable responses across the five Aboriginal groups. This may be due to the variable awareness, knowledge and experience of forest carbon management. There were a total of twenty interview participants. Analysis was not sorted across Aboriginal groups, but tallied across the twenty respondents for Figures 4-16.

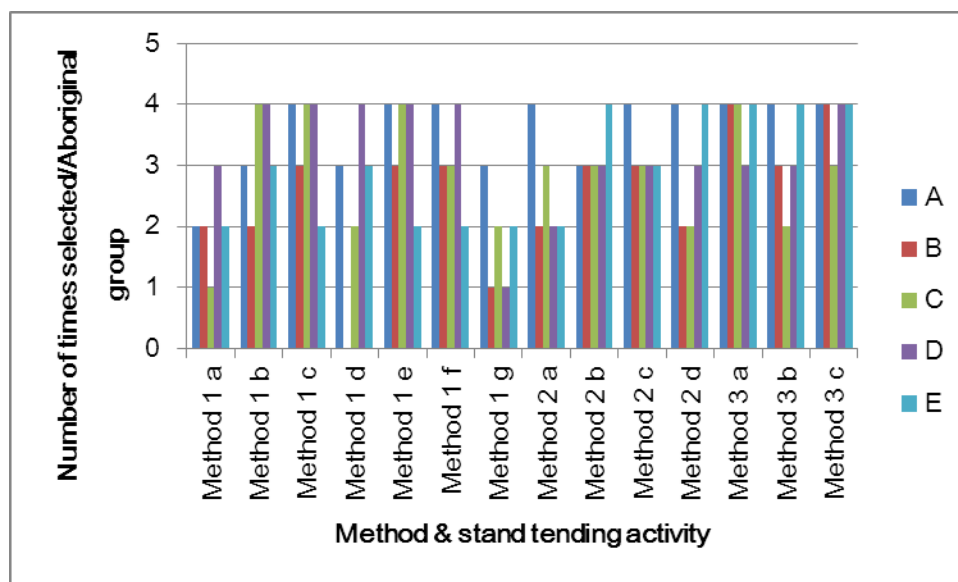


Figure3: Overview of preferences for Improved Forest Management methods and stand tending activities by five Aboriginal groups. Numbers and letters correspond with Table 12 above.

In Figure 3, it shows one the highs and lows across all three methods and all stand tending activities. This figure also allows the reader to see an overview of the highs and lows across the five Aboriginal groups. Figures 4-7 breaks down acceptability of the methods and stand tending activities in more detail, see below.

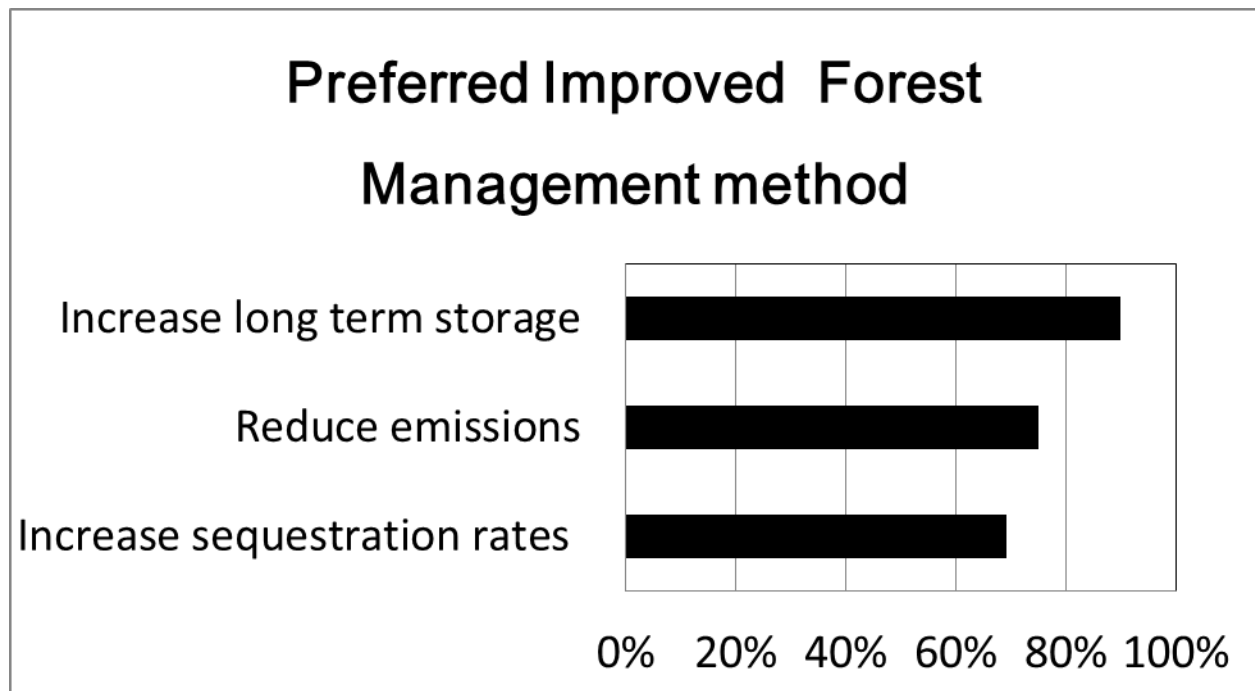


Figure 4: Preferences for Improved Forest Management method.

Figure 4 shows you the method of Increasing long term carbon storage was the most acceptable by the respondents at (90%). The method of Reducing emissions were the second most acceptable (75%), and Increasing sequestration possessed the least support at 70%, see Figure 4 above.

4.4.1 Preferences for stand tend activities for Improved Forest Management Method #1- Increase sequestration rates

Respondents were asked whether or not seven examples of stand tending activities for the method of increase sequestration rates were acceptable? Figure 5 shows the data analyzed across the 20 respondents from all five Aboriginal groups.

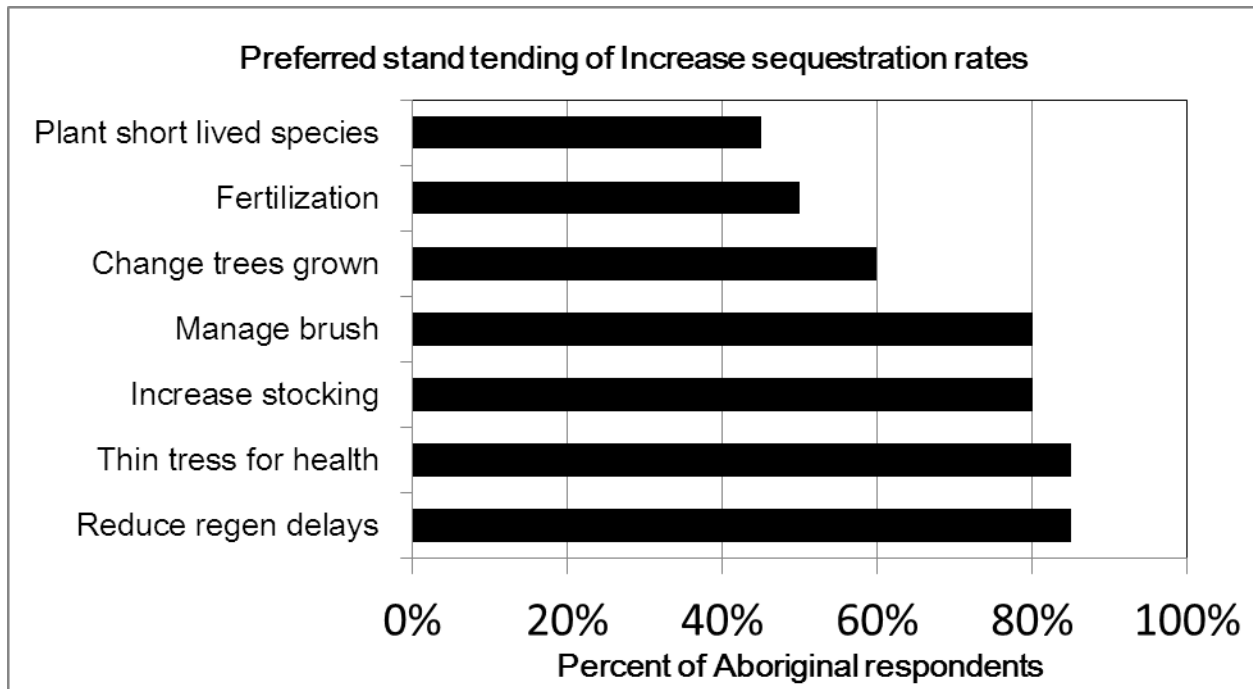


Figure 5: Preferences for stand tending activities for Improved Forest Management method #1 – Increase sequestration rates.

Thinning trees to promote healthy forests and reducing regeneration delays were the two most acceptable stand tending techniques in this method at 85% each. Managing brush and increase stocking activities both each had 80% acceptability. Change trees grown such as use of faster growing trees/seeds, i.e. change in species (Red Alder), change in genetics (vibrant Red Cedar seeds selected from different ecotype in BEC) had 60% consensus. Fertilization had 50% acceptability whereas plant short-lived species had 45% acceptability. Fertilization and short-lived forest species had the least acceptability from the interview participants across this section of the stand tending methods and activities. The unfavourable perception of fertilization was due to the unknown chemical effects to the environment and water quality. Short-lived forest species was perceived as changing the forest and switching it from native species to non-native species, i.e. respondents feel very strongly about maintaining Western red cedar.

4.4.2 Preferences for stand tending activities for Improved Forest Management method

#2 – Reduce emissions

Respondents were asked whether or not four examples of stand tending activities for the method of reduce emissions were acceptable? Figure 6 shows the data analyzed across the 20 respondents from all five Aboriginal groups.

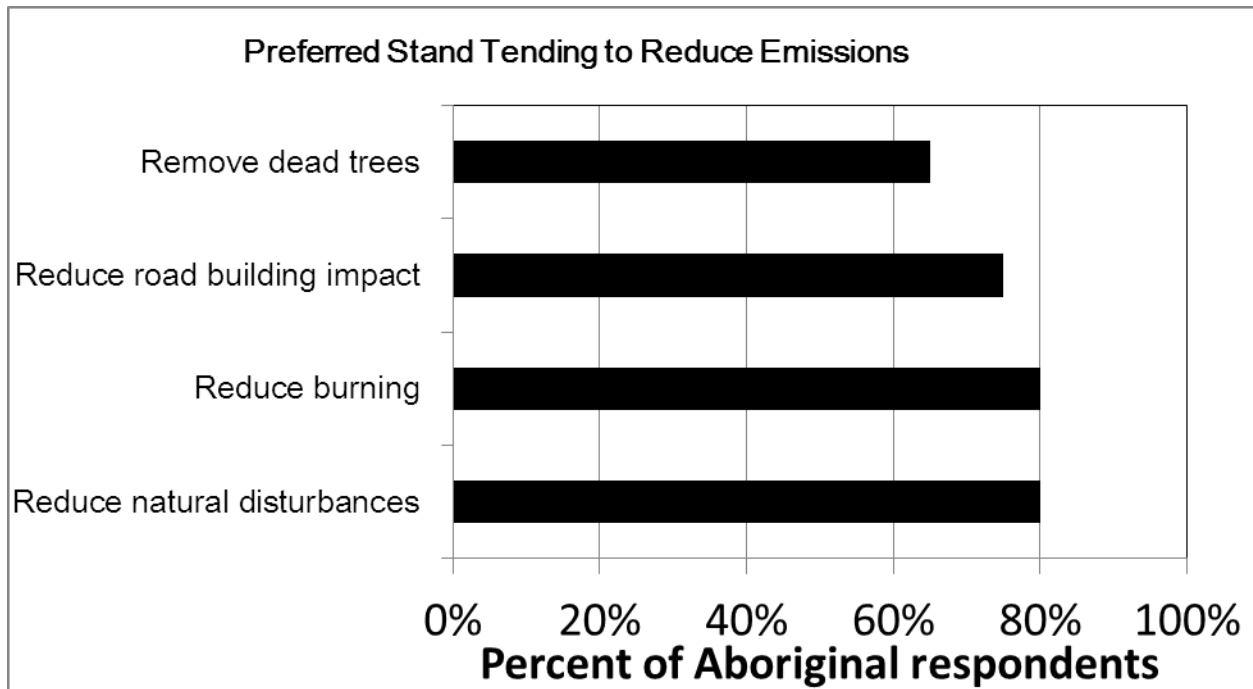


Figure 6: Preferences for stand tending activities for Improved Forest Management method #2 – Reduce emissions

Both reduce burning and reduce natural disturbance stand tending activities had 80% each for acceptability. Reducing new road widths such as less road building had 75% acceptability. The last stand tending activity, remove dead trees had 65% acceptability.

4.4.3 Preferences for stand tending activities for Improved Forest Management method

#3- Increase carbon storage

Respondents were asked whether or not three examples of stand tending activities for the method of increase carbon storage were acceptable? Figure 7 shows the data analyzed across the 20 respondents from all five Aboriginal groups.

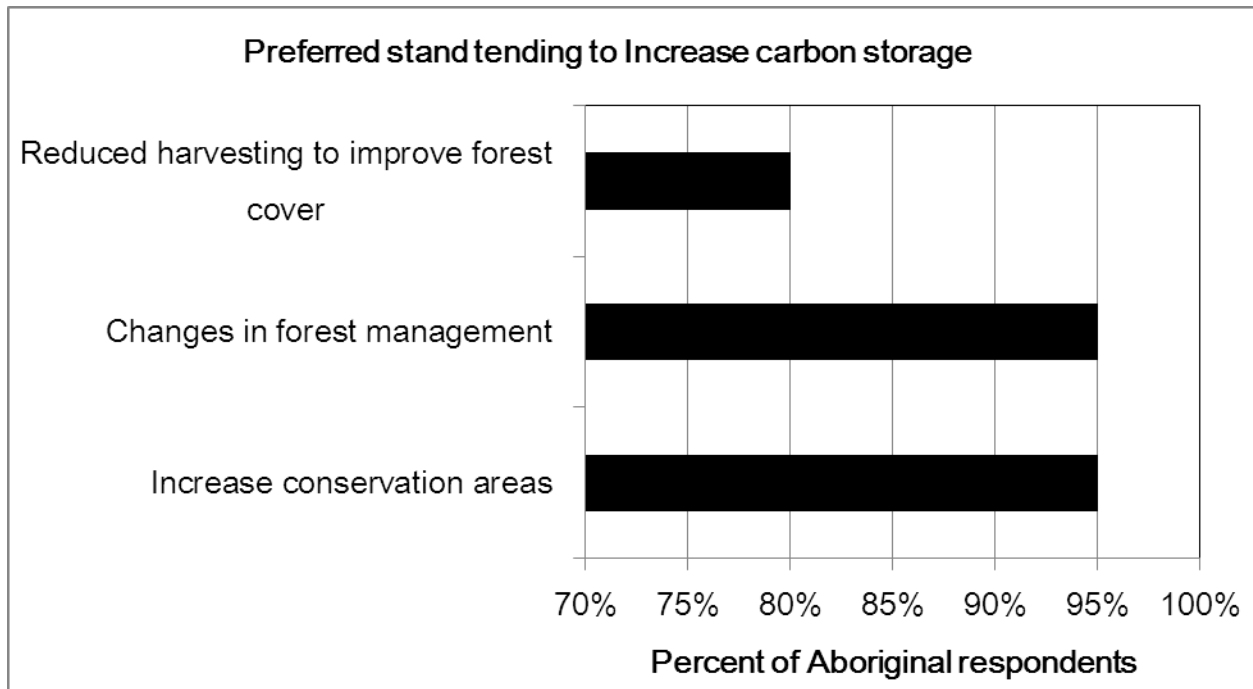


Figure 7: Preferences for stand tending activities for Improved Forest Management Method #3 - Increase carbon storage.

Figure 7 shows you an increase in conservation areas and changes in forest management were deemed equally acceptable with 95% of interview participants each. The stand tending activity of conservation areas was favoured because respondents said they like the idea of generating revenue from protecting culturally significant sites and riparian areas. The stand tending activity of changes in forest management was favoured because respondents said they are interested in value-added opportunities that could increase revenue and create employment for community

members. The activity of reduced harvesting through forest cover constraints was the least acceptable at 80% which is still a high consensus.

4.5 Preferences for contractual arrangements

Respondents were asked five closed-ended questions about contractual arrangements. Four questions came from the Crown forest tenure framework: renewability and duration, transferability, comprehensiveness, and access exclusivity. See 3.2.3 Property rights for Aboriginal groups pursuing carbon programs through forest licences (Luckert et al, 2011). The last question came from the PDD. All five questions asked in this section are relevant to a potential carbon arrangement.

4.5.1 Renewability and duration identified preferences

Respondents were asked if they were interested in a renewable or non-renewable carbon arrangement. If they were interested in having it renewed, how long would they like it to be renewed to? If they were interested in a non-renewable, how long would they like it to be? 80% respondents noted that renewable contractual arrangements were the only type they were interested in i.e. no interest in nonrenewable agreements. Some interviewees chose not answer because they did not know enough about tenure renewability and duration. Two Aboriginal groups are farther along the BC Treaty Process were the two Aboriginal groups that had all interviewees noting the need for renewable agreements. This indicates a consensus indicating that these two Aboriginal groups may have a longer view in their horizon than the non-Treaty or pre-Treaty Aboriginal groups in this study. No respondents chose a non-renewable carbon contract.

There was no consensus on suitable duration. Responses ranged from 5 to 100 years. More education on this aspect of contractual arrangements for forest tenures is essential for Aboriginal leaders to make an informed decision.

4.5.2 Preferences for transferability identified respondents

Five questions were asked about transferability options. Respondents were asked four closed-ended questions and one open-ended question about if they would be interested in the following options characteristic of transferability: sale, lease, post as collateral, dispose, and if there is anything respondents wanted to add? Figure X below shows what the respondents listed for transferability preferences. The figure below shows the data in percentages across the total 20 respondents.

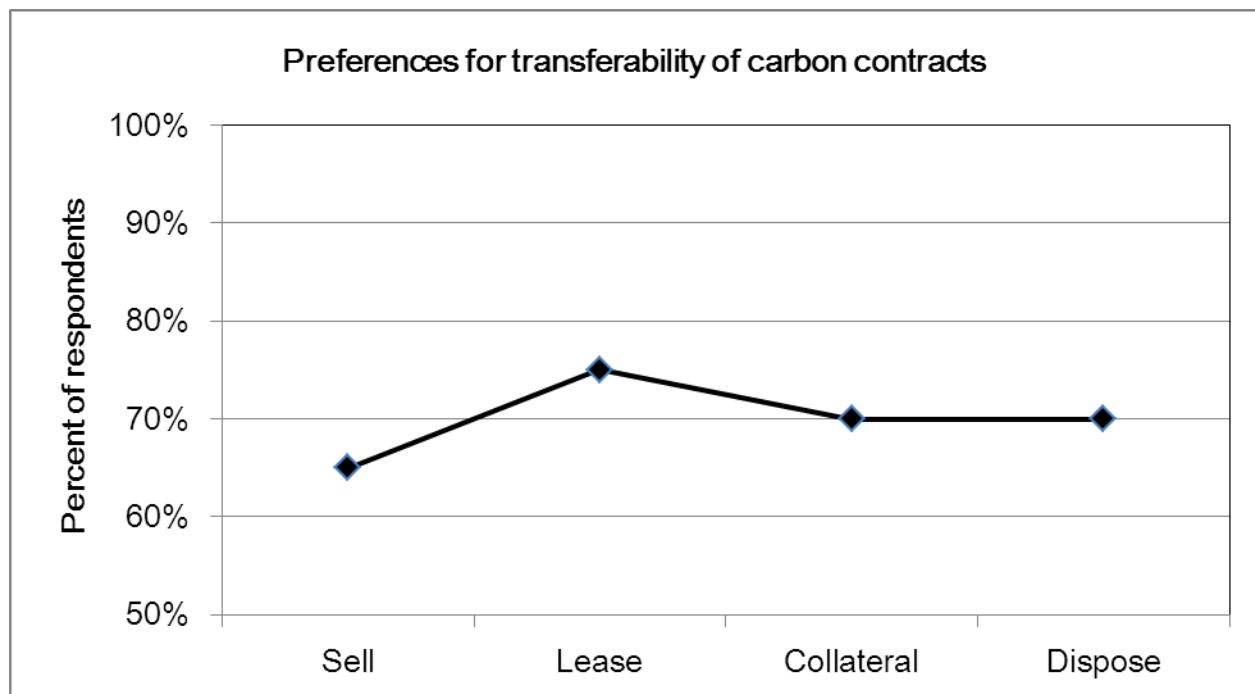


Figure 8: Respondent's preferences for transferability for a carbon contractual arrangement

Aboriginal groups A and E had a consensus on the option of selling their carbon arrangement.

Aboriginal groups A and E had a consensus on the option of leasing their carbon arrangement.

Aboriginal groups A and E had a consensus on the option of disposing their carbon arrangement. Aboriginal group E had full consensus on all the options in transferability. Aboriginal group E said they were interested in having the options of these transferability characteristics opposed to not having the option, but whether or not they would use any of these options is a different matter that they would research and assess separately. Aboriginal groups were concerned about what would happen with the land if they were to sell, lease, post-as-collateral or dispose of their carbon arrangement. For example, if they sold their carbon project then would the reserve or Treaty land be sold or transferred with the carbon project? They were concerned about losing access and rights to their forest land if they engaged in any of these options.

4.5.3 Preferences for comprehensiveness identified respondents

All botanical products had a consensus by Aboriginal groups A and D. Soil, all botanical products and wildlife had a consensus by only Aboriginal group A; this Aboriginal group is opposed to the harvesting of soil, subsurface and mining activities so they are motivated to have soil and subsurface included in a carbon arrangement for control.

The low consensus for the comprehensiveness characteristic options was consistent by Aboriginal group C. This may be due to their interest in a carbon arrangement that included only carbon because of their position in the BC Treaty Process. I listed carbon as Other, see Appendix A Interview Schedule. This may also be due to their forest land base is smaller than the other Aboriginal groups. Also, the low consensus may be due to the lack of awareness about comprehensiveness of tenure arrangements. Aboriginal groups B listed the following examples as Other in this question: green energy; geothermal; control of roads to deal with poachers, hunters, Cedar poachers; and something beneficial for environment and community. Aboriginal group D is interested in a carbon arrangement that only includes carbon and non-timber forest

products, so I listed this as Other. I listed Aboriginal group's interest in biodiversity credits as Other, see Figure 8.

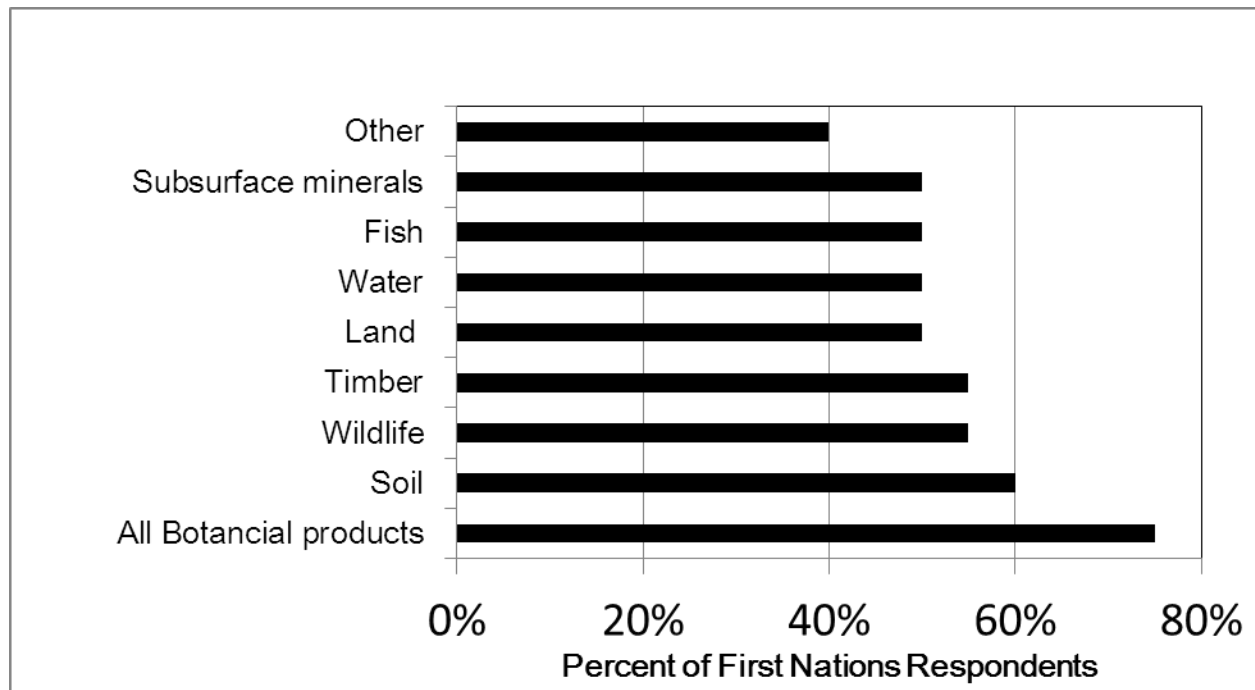


Figure 9: Preferences for comprehensiveness in a carbon contractual arrangement.

4.5.4 Access exclusivity identified by the respondents

Access exclusive in the interview schedule and in this study means exclusive to an Aboriginal group's community members. Aboriginal groups want to ensure that their community members are still able to access forest land for subsistence and to harvest non-timber forest products.

Two out of five Aboriginal groups had a consensus on access exclusivity. Aboriginal groups C and E had a consensus about owning an exclusive carbon arrangement. Aboriginal groups C's views of the BC Treaty Process may be why they prefer exclusivity, another reason may be may be because they have a relationship with their local municipality such as a joint Community Forest Agreement. Aboriginal group E is concerned about terrain stability and

restoration of their slide areas so this may be why they may not want any other entities in their forest land. Another factor may be because Aboriginal group E bought all the forest tenures in their traditional territory so they would be the only tenure holder operating in their forests. Aboriginal group B had interest in a non-exclusive carbon arrangement. This Aboriginal group is in the BC Treaty Process. During interviews this Aboriginal group discussed how a large parcel of their traditional territory was made into a nation park by the federal and provincial governments. Aboriginal groups A and D had higher interest in exclusive than non-exclusive carbon arrangements. Aboriginal groups A and D are partially not interested in an overly restrictive arrangement because of their existing agreements and MOUs to their local municipality governments and other stakeholders in the area. However, they are still interested in an exclusive tenure arrangement in certain areas that includes their community members only. One interviewee at Aboriginal group D said he is interested in a gated access to the roads. One interviewee at Aboriginal group B said he is interested in a control strategy for access and roads.

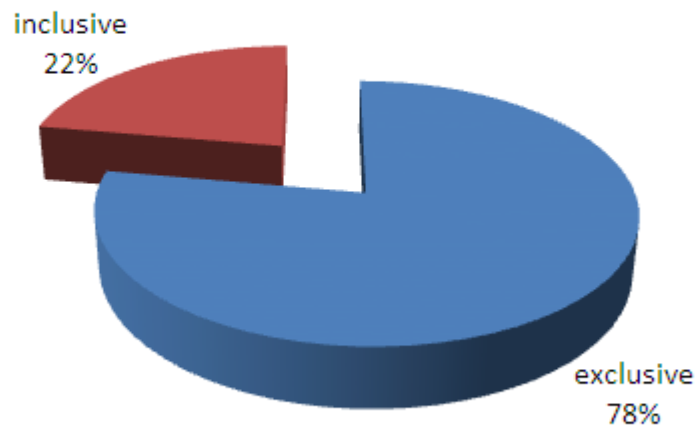


Figure 10: Respondent’s preferences for access exclusivity on carbon offset projects.

4.5.5 Preferences on decision-making for carbon revenue distribution

The five selected Aboriginal groups were asked how they would like to distribute revenue from a carbon project because it is a requirement in the PDD process. There was not a consensus and answers varied. Revenue from a potential carbon project to be used for a specified community fund, department, or program decided before hand was listed by all Aboriginal groups at different interest levels. It had the most interest by Aboriginal groups B and E. Aboriginal group A was more interested in providing a monetary distribution to all band membership because this is an existing practice from forestry revenue. For example, once per year each registered community member receives a monetary distribution from the forestry department. Aboriginal group B was interested in a community consultation with community members to decide how to use the carbon revenue. I listed this as Other for Aboriginal group B. Aboriginal group C said it should be up to the nation’s leadership for decision-making. I listed

this as Other for Aboriginal group C. Aboriginal group D has an existing protocol in place for revenue. They use a formula for revenue coming into the Aboriginal group, and it works out so that a portion of money goes into a community fund for members. Then, community members have to go through an application process in order to receive funding. I listed this as Other for Aboriginal group D.

There was low interest in the option of having Chief and Council to decide how carbon revenue is to be managed which may be due to political or power reasons. For example, it could be viewed that Chief and Council elected terms are every two years therefore they are only looking at forestry and environmental agendas for the short term, see Figure 13.

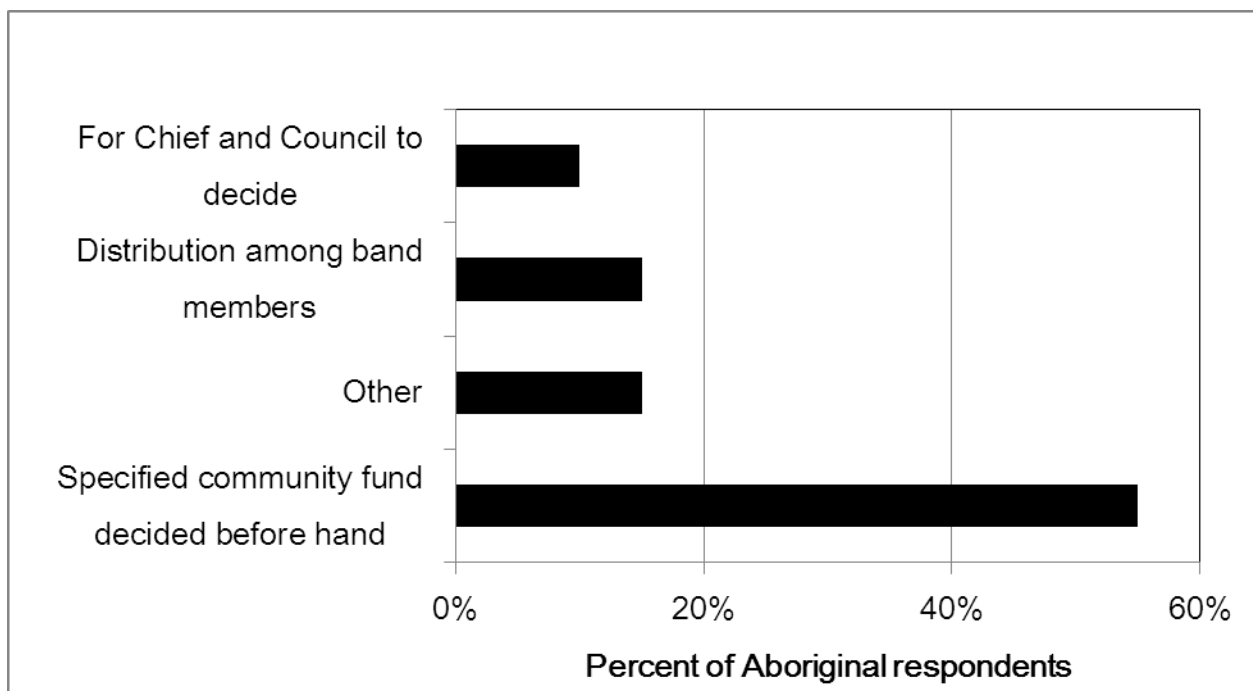


Figure 11: Preferences on decision-making for carbon revenue distribution.

4.5.6 Preferences for carbon buyers

Preferences for four different types of carbon buyers are asked in closed-ended questions: Pacific Carbon Trust, private corporations, non-government organization or carbon broker.

4.5.6.1 Respondent's interest in selling their carbon offsets to Pacific Carbon Trust

Respondents were asked if they were interested in selling their carbon offsets to Pacific Carbon Trust. They listed this in their data.

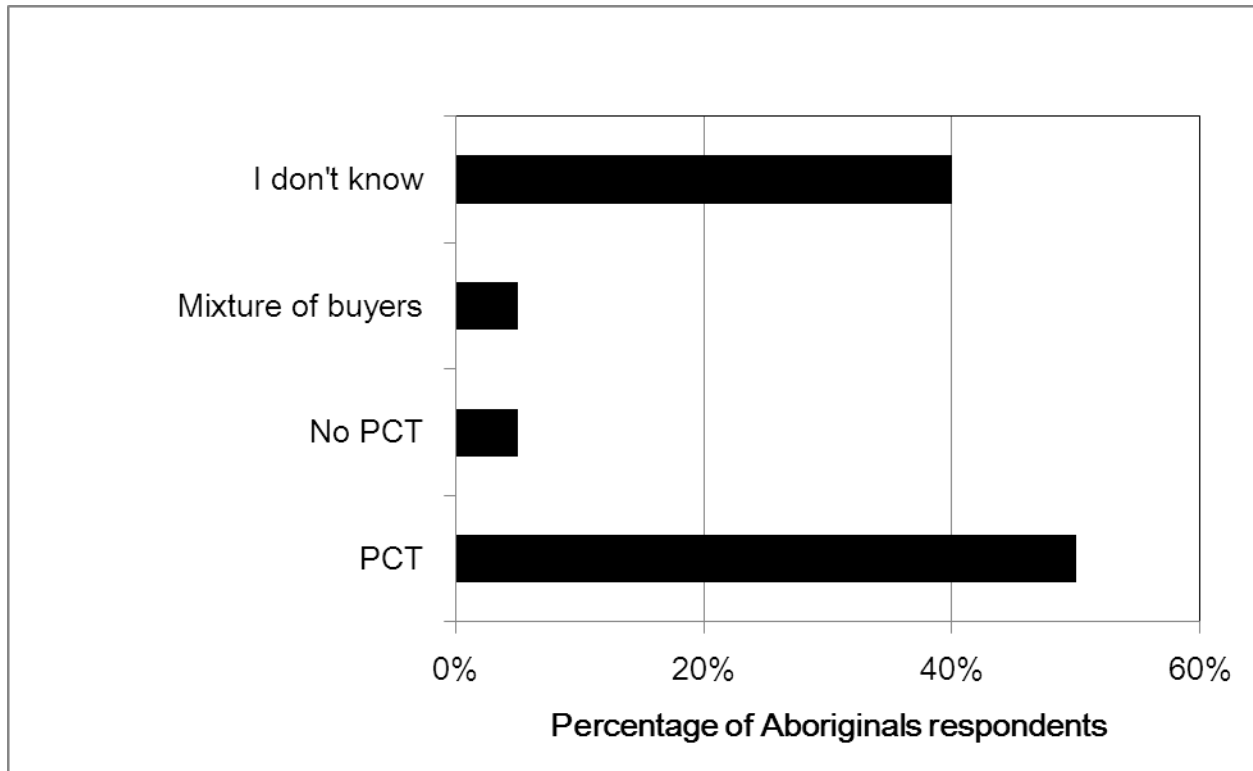


Figure 12: Respondent's interest in selling their carbon offsets to Pacific Carbon Trust

There is close to 50/50 interest in selling carbon offsets to Pacific Carbon Trust.

4.5.6.2 Respondent's interest in selling their carbon offset to a private corporation

Respondents were asked if they were interested in working on a carbon project with a private corporation, including selling their carbon offsets to them, see Figure 15.

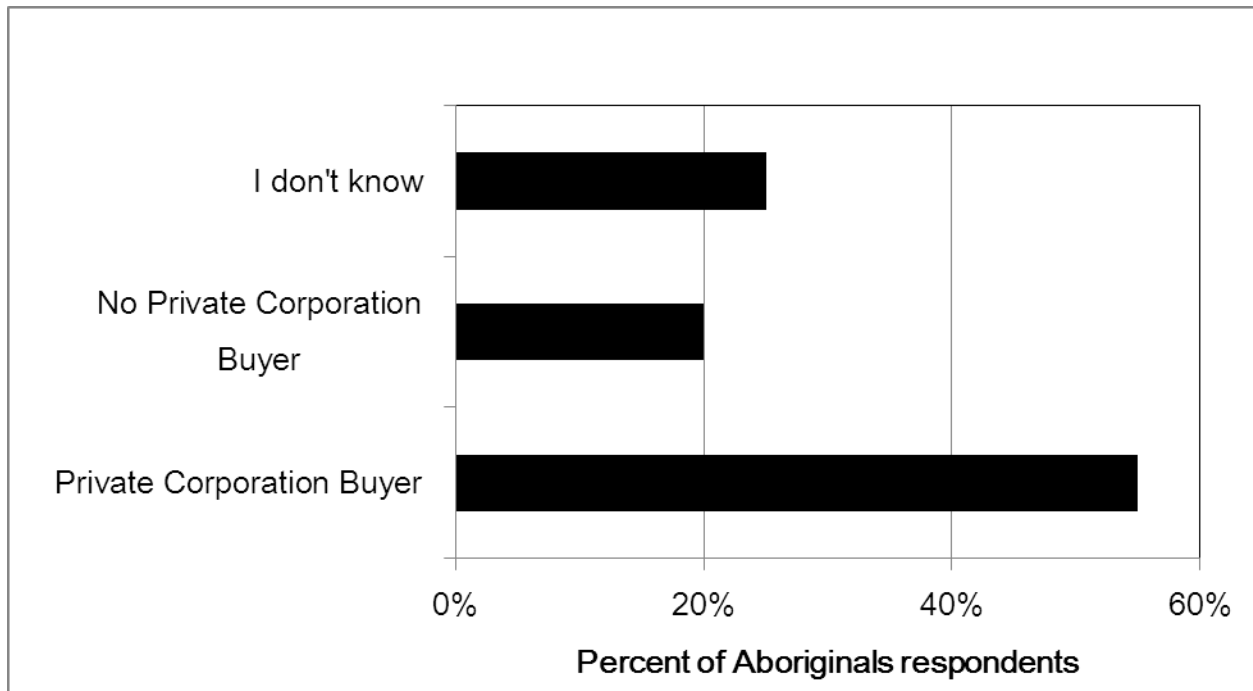


Figure 13: Respondent's interest for selling their carbon offsets to a private corporation.

Only Aboriginal group D had a consensus about selling their carbon offsets to a private corporation. Otherwise, there is no consensus amongst the four other Aboriginal groups.

4.5.6.3 Respondent's interest for selling their carbon offsets to a non-government organization

Respondents were asked if they were interested in selling their carbon offsets to a non-government organization. They listed this in their data.

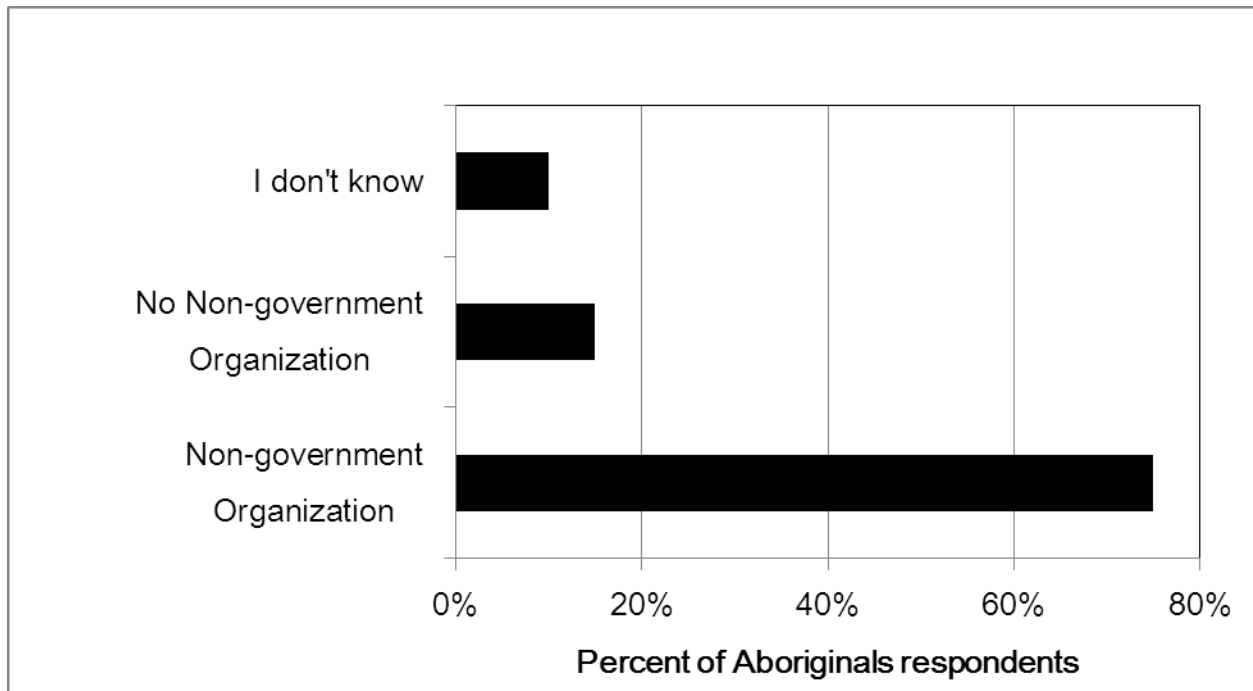


Figure 14: Respondent's interest for selling their carbon offsets to a non-government organization.

Aboriginal group A had a group consensus about working with and selling their carbon offsets to a Non-Government Organization. Aboriginal groups B, D and E were interested but did not have a full consensus within their groups.

4.5.6.4 Respondent's interest for selling their carbon offsets to a carbon broker

Aboriginal groups were asked if they were interested in selling their carbon offsets to a carbon broker on a carbon project including selling their carbon offsets to them. They listed this is their data, see Figure 17.

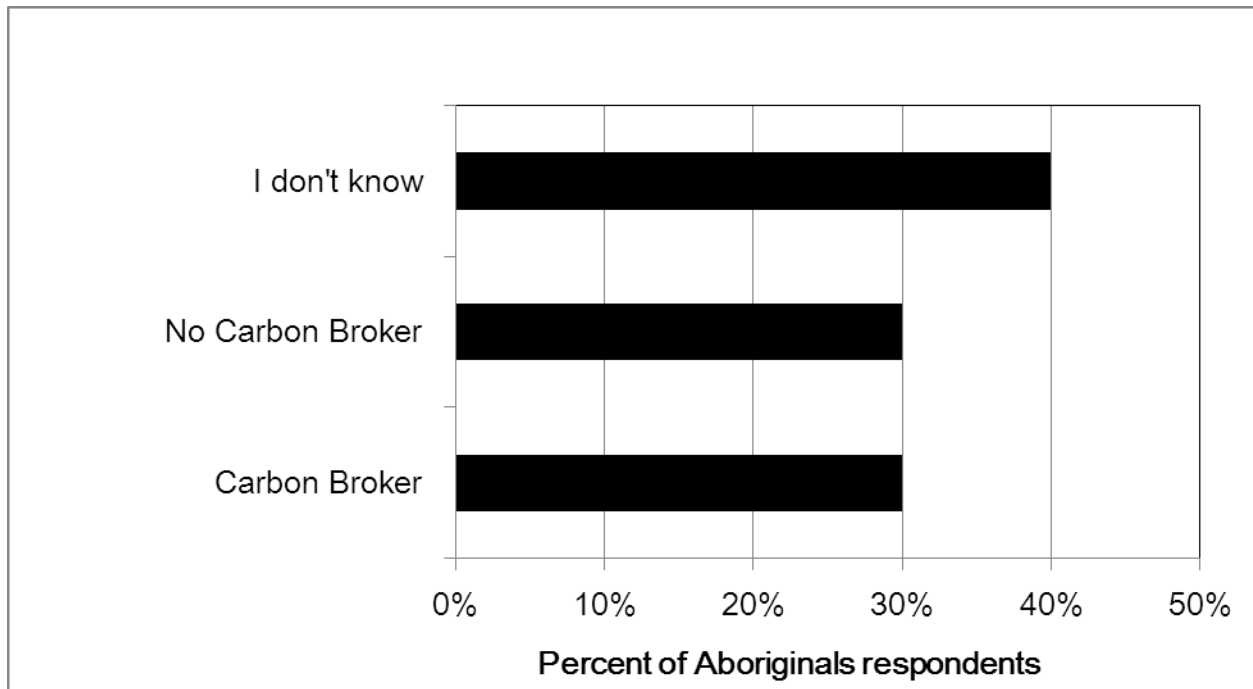


Figure 15: Respondent's interest for selling their carbon offsets to a carbon broker.

Only Aboriginal group E had a consensus about selling their offsets to a Carbon Broker. The other four Aboriginal groups had no consensus. The reason may be because there are more trained forestry professionals on staff at group E to make an informed decision.

4.5.7 Awareness of other entities in a carbon offset project

Respondents were asked whether or not they were aware of standard making bodies, verifiers, validators, exchanges and registries because these entities are part of the process of a PDD (see Figure 18). Aboriginal group E had a consensus across all the entities in a carbon offset project. They have the most awareness of the carbon industry due to the number professional foresters that work in their staff. They have three staff members that have Master of Science in forestry and one staff that has Bachelor of Science in forestry. There is value in having a number of trained forestry professionals working at Aboriginal administration offices. A large number of interviewees across the remaining four bands were not aware of the other

entities in a carbon offset project. Although there were low numbers of awareness of other entities in this figure, there is still capacity at these Aboriginal groups. The low numbers may be due to the low number of staff at each band administration. For example at Aboriginal group C, there is only one person in their forestry department who is the forestry manager. He is a Registered Professional Forester and is the tribe's main staff person who represented Aboriginal group's interests when they worked on their feasibility study. Another example from Aboriginal group D is the economic development manager that has been working on their Aboriginal group's PDD where they have partnered with a firm that specializes in carbon projects. The economic development manager is a Registered Professional Forester. Aboriginal group D has two Registered Professional Foresters on staff. The other RPF is the forestry manager. A third example from Aboriginal group A is a professional forester and natural resource technologist who are two out of the three forestry staff members.

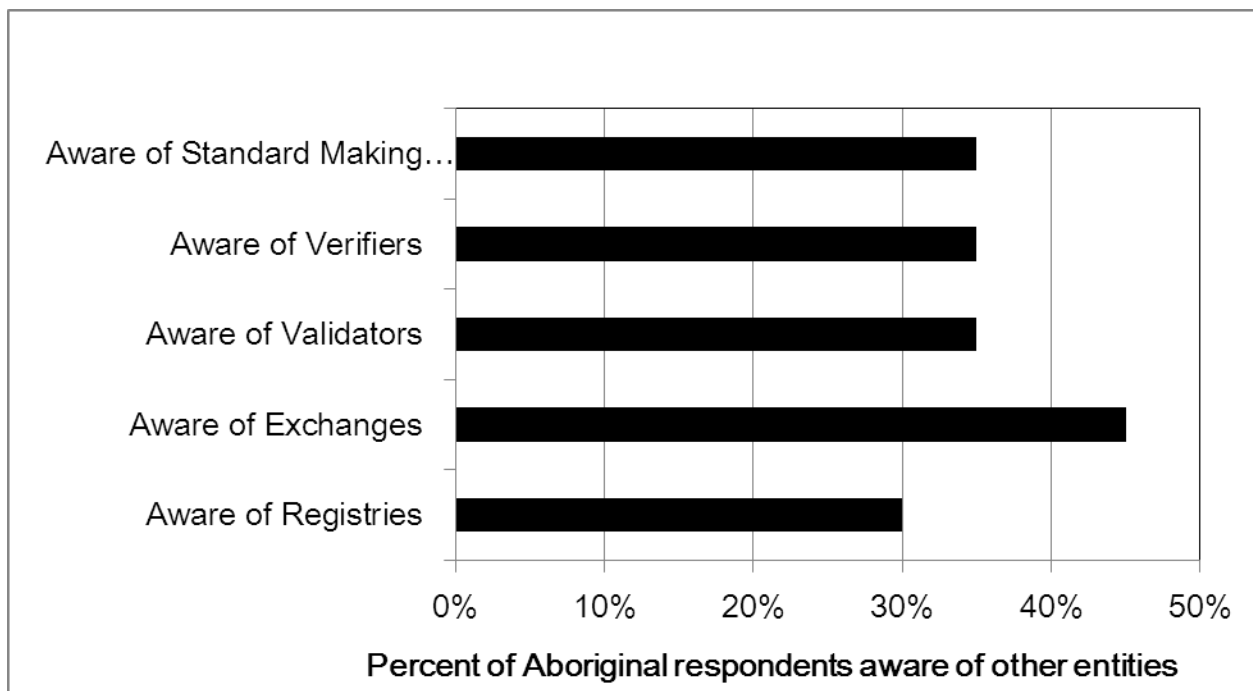


Figure 16: Respondent's awareness of other entities in a carbon offset project across the five Aboriginal groups.

Chapter 5: Conclusion

In conclusion, my selected Aboriginal groups have unique criteria; there is no consistent level of awareness; and there are no consistent preferences. In my assessment, as an Aboriginal forester, the groups I interviewed were very specific about what they would or would not include in their forest management practices. They made it clear that they are unwilling to sacrifice their cultural, environmental and social values for economic gain. However generating income is clearly important to them as well, so they seem to be considering possible tradeoffs in the future between their economic versus cultural, environmental and social goals. Forest carbon offset projects will need to incorporate the unique cultural criteria of Aboriginal communities in collaboration with Aboriginal communities. Aboriginal leaders and community members will need to be involved in developing forest carbon training material for Aboriginal groups. A plain language, culturally appropriate forest carbon guidebook would appear to be a desirable next step for Aboriginals moving ahead in the process.

Awareness is low for half of my participants so one recommendation to note is that there is value in training, so that all groups might achieve the high level of trained staff of Aboriginal group E. All Aboriginal groups would benefit from understanding the technical concepts of baseline and reference levels because these may be an issue for Aboriginals who want to use carbon offsets as an extra measure to protect culturally significant sites. Those Aboriginal groups that have old growth forests, or that are already practicing a holistic or conservation approach to forest management may accrue fewer offsets annually when compared with those groups that have second growth forests. In this study four out of the five Aboriginal groups' traditional territories are second growth, so those groups stand to benefit more from sale of carbon offsets. Aboriginal groups will have to learn and fully understand carbon terms, concepts

and processes before they can make an informed decision about project types because they will need to understand forest management implications for the short and long term.

My analysis shows little to no consensus in the area of preferences for carbon projects and contractual arrangements. Interests varied across and within Aboriginal groups in these topic areas which may be due to the lack of awareness and understanding of carbon terms, concepts and processes. My final recommendation is that each Aboriginal group should select those forest management activities that are most preferred in any contractual agreement.

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Appendices

Appendix A – Interview schedule

(Untitled)

Time and Date:

Place:

Interviewer: Lori Sparrow

Interviewee:

Key Informant OR Actor Group which the participant identifies/is affiliated with:

The purpose of this study is to examine the following objectives: 1) To identify the cultural, social, environmental and economic criteria used by selected First Nations to evaluate potential forest carbon offset projects; 2) To assess the First Nation's awareness of forest carbon benefits; 3) To identify the preferences for agreement for forest carbon offsets attractive to First Nations; and 4) To evaluate how different agreements will support First Nation participation in carbon offset projects.

In interviews with Key Informants: This study seeks to examine the understandings of carbon offset from the community perspective of the (First Nation) territory; and perceived benefits.

Type of Interview Questions:

Introduction: I want to ask you about forest carbon management projects and how they can accommodate you/your Nation's priorities. Let's start with your priorities.

Priorities / Hierarchy

1. There are 4 categories of values that you have to consider when managing a carbon project and they are: cultural values, environmental values, economic values and social values.

- a. When I speak about cultural values I am referring to any kind of forest harvesting activity or any kind of forest-related activity that is related to your cultural, whether it is a daily, weekly, monthly, seasonally, or annual event. What are some cultural values that you consider a priority?
- b. When I speak about environmental values I am referring to any kind of environmental condition or environmental characteristic about the forest that is related to your cultural harvesting of timber or non-timber forest products. What are some environmental values about the forest that you consider a priority?
- c. When I speak about economic values I am referring to any kind of business activity that involves revenue for your band. What are some economic values that you consider a priority?
- d. When I speak about social values I am referring to any kind of social activity or value carried out or managed for in your community in day-to-day life whether it is for leisure, subsistence or work related. What are social values that you consider a priority?

Personal views on the process of prioritizing

Now that you have listed your values, I would like to discuss how you prioritize them for the sake of a carbon offset project. I am wondering what your personal views are on your process of prioritizing. And what your personal views are of the values that should get priority. Let's start the questions for this area.

- 2 a). How does your community currently balance all their values on the land?
- b). How will you decide to make a trade-off between economic, environmental, cultural and social conflicting priorities in a potential carbon offset project?
- c). Have you had to make any trade-offs to date, or do you see any trade-offs that you expect to make?

- d) How important is it to you to be part of the decision-making process?
- e) How will you choose which one of these values that you are willing to compromise for the sake of a carbon offset project?

Forest carbon management projects

Now I am going to ask you about your personal views about carbon offsets.

- 3. a) Can you describe a carbon offset project that you would like to have?
- b) What do you think is involved in starting up a forest carbon management program? What do you think the risks are? What would you be worried about?
- c) Has your Nation tried this before? Why or why not? With whom? Where in the process are you?
- d) How will your existing land title and authority support potential carbon benefits? (ie. agreements, MOUs, forest licences, negotiations, etc.)
- e) How will your existing land title and authority restrict potential carbon benefits?
- 4. Are you aware of baseline and additionality with respect to carbon offsets?
- 5. There are several types of carbon offset projects but what I am going to focus on is just one type which is Pacific Carbon Trust (PCT) forest-based projects. Within the PCT forest-based projects type, there are 4 different types, I am going to list and briefly describe them. And then I am going to ask you which one you prefer?
 - i) Afforestation means the direct human-induced conversion of land that has not been Forest Land for at least 20 years prior to project commencement to Forest Land through planting, seeding and/or human-induced promotion of natural seed sources.
 - ii) Reforestation means the re-establishment of trees on land through planting, seeding and/or human induced promotion of natural seed sources.

iii) Improved Forest Management means a system of practices for stewardship and use of forest land, which may include production of harvest wood products, which reduces GHG emissions and/or increases GHG sinks / carbon pools.

iv) Conservation / Avoided Deforestation means preventing the direct human-induced conversion of Forest Land to a non-forest land use. Logging as part of forest management is not included as a potential conversion / deforestation activity that may be avoided under this definition.

a) Which one of these different types would you prefer? Why?

6. I am going to list the eligible management activities or techniques of Improved Forest Management, which technique or method is acceptable or interesting to you:

Table 13: Improved Forest Management techniques and examples listed in the BC Forest Carbon Protocol (Ministry of Environment, 2012).

Technique/Method	Examples	Yes	No
1. Increase sequestration rates	Fertilization		
	Improving stocking		
	Reducing regeneration delays		
	Use of faster growing trees/seeds		
	Thinning disease and suppressed trees		
	Managing competing brush		
	Short-lived forest species		
2. Reduce emissions	Capturing mortality		
	Reducing natural disturbances		
	Reducing burning		
	Reducing new road widths		
3. Increase long-term carbon storage in forests and wood products	Conservation areas		
	Reduced harvesting through forest cover constraints		
	Increasing proportion of long lived harvested wood products in conjunction with other changes in forest management		

7. Now that we have talked about values and some aspects of forest carbon management, next I am going to talk about what is important to you about contractual arrangements.

(a) Duration and Renewability refers to the period or term over which a property right can be exercised; it also refers to whether it can be renewed or non-renewable. Which type would you prefer:

◇ Renewed?

◇ Non-renewable?

i) If renewed, how long would you want the contract to be renewed to?

ii) If nonrenewable, how long would you want the contract to be?

(b) Transferability refers to the extent to which tenure holders can sell, lease, post as collateral, or otherwise dispose of the property to which they hold rights. Do you want your First Nation to be able to sell its carbon offset contract?

◇ Yes

◇ No

Do you want your First Nation to be able to lease its carbon offset contract?

◇ Yes

◇ No

Do you want your First Nation to be able to post as collateral its carbon offset contract?

◇ Yes

◇ No

Do you want your First Nation to be able to dispose of its carbon offset contract?

◇ Yes

◇ No

Are there any other contractual arrangements you would find acceptable for Transferability that has not been mentioned?

(c) The more inclusive a tenure is in terms of the number of resources to which it grants rights, the more comprehensive it is said to be. Fully comprehensive rights to forests would include the land itself, all botanical products, the soil, wildlife, water, fish and subsurface minerals. What contractual arrangement would you find acceptable for Comprehensiveness?

Prompt for me if they do not answer:

◇ the land itself

◇ all botanical products

◇ the soil

◇ wildlife

◇ water

◇ fish

◇ subsurface minerals

◇ timber

◇ other? _____

(d) Exclusivity refers to the right of tenure holders to prevent others from freely enjoying the benefits of the property to which they hold rights; it also refers to the degree to which individuals or groups are allowed access. What contractual arrangement would you find acceptable for Exclusivity?

◇ Exclusive

◇ Non-exclusive

(e) What kind of aspects would you want in a contractual arrangement that have not been discussed?

(f) How would you like to distribute revenue from forest carbon offsets?

◇ Monetary distribution to all band members upon payment

◇ Specified Community Fund, Department or Program decided before hand

◇ For Chief and Council to decide

◇ Other: _____

(g) What benefits would you like to be included in the contractual arrangement that you have not mentioned yet?

8. Which of the factors above are the most important?

9. What benefits do you expect to see from a forest carbon offset project?

a). What would you like to see?

b). Are there any non-monetary benefits that you would like to see?

c). Given what you told me so far, are there any other criteria/values that you would use to evaluate the success of this carbon offset project?

10. (a) Would you want to work Pacific Carbon Trust (Crown Corporation) on a carbon offset project? Why? Why not?

◇ Yes

◇ No

(b) Would you want to work with a Private Corporation (Buyer) on a carbon offset project?

For an example, Shell Oil from Alberta or another? Why? Why not?

◇ Yes

◇ No

(c) Would you want to work with a non-government organization (NGO) such as an environmental group on a carbon offset project? Why? Why not?

◊ Yes

◊ No

(d) Would you want to work with a Carbon Broker (Broker) on a carbon offset project? Why? Why not?

(e) If no to above questions, then who would be acceptable?

11. Who would you not want to work with on a carbon offset project? Why?

12. Are you aware of the other following players in a carbon offset project:

a) Registries ◊Yes ◊No

b) Exchanges ◊Yes ◊No

c) Validators ◊Yes ◊No

d) Verifiers ◊Yes ◊No

e) Standard Making Bodies ◊Yes ◊No

13. Those are all the questions I have for you today. Is there anything else you would like to contribute?

Appendix B Interview Participant Consent Form

(WILL BE ON UBC LETTERHEAD)

(Untitled Research project)

I _____ (please print), have read and understand the cover letter provided by Lori Sparrow for the research project entitled “(Untitled)”.

I understand that the data collected for this research project will be securely stored at the University of British Columbia for a period of five years, and at the (Name) First Nation office in _____ for twenty years.

I understand that (Name) First Nation may at some future point use the data from this research project for other studies, or authorize a third party to use the data. (Name) First Nation or any party authorized by (Name) First Nation, are required to maintain my anonymity and confidentiality. I also understand the researcher may at some future point use the data from this research project for other studies, and will also maintain my anonymity and confidentiality.

I am a volunteer in the study and can choose not to answer any question and may withdraw from this research project at any time.

I agree to the interview and am aware that the conversation with the researcher is to be audio recorded.

I understand that I will remain anonymous in any publication and/or public presentation of research findings and that if I wish to be identified, I must explicitly agree to have my identity revealed, and sign a statement to that effect with a witness by a third party.

I understand the risks and benefits that may result from this study. I agree to participate in this research project.

I wish to be provided with a summary of the research results.

Dated: _____

Signature of the Participant _____

Appendix C Background on carbon offset projects for site visit

Introduction

The primary cause of climate change is widely considered to be the anthropogenic release of greenhouse gases (GHG, Solomon, 2007). GHGs are chemicals in the earth's atmosphere which increase the portion of the sun's radiation that is trapped within the earth's atmosphere. Although this is a natural effect, human activities are resulting in increased concentrations of GHG in the atmosphere, especially carbon dioxide (CO₂), which is resulting in higher temperatures. The annual CO₂ emissions from the burning of fossil fuels and through changes in land-use reached a record 8.4 billion tons in 2009 (Earth Policy Institute, 2009). Without international reform, the Intergovernmental Panel on Climate Change (IPCC) predicts a global doubling of CO₂ emissions by 2030 (Solomon, 2007).

Forests have the potential to help mitigate climate change because trees absorb, or 'sequester', atmospheric carbon as they grow. They store this carbon within their biomass; of which roughly half is carbon (Greig and Bull, 2009). In fact, forests are the largest terrestrial storehouses for carbon on the planet (Black et al., 2008), representing 86% of the planet's aboveground carbon stores (Sedjo, 1993). In addition, forests store more than twice as much carbon as that contained in the atmosphere, and annually sequester nearly 10% of global carbon emissions (Black et al., 2008).

The amount of carbon that moves between, and is stored within, the various carbon pools in a forest depends on the forest's life stage (Bradford and Kastendick, 2010). The rate of carbon uptake into forests from the atmosphere is highest in young forest stands (Bradford and Kastendick, 2010; Böttcher, 2007). At this life cycle stage, the rate of carbon sequestration within the living biomass of growing trees and understory vegetation is high. However, carbon

storage is highest in older stands (Bradford and Kastendick, 2010; Böttcher, 2007): the trees are larger and carbon stored within living biomass pools is transferred to dead and decaying biomass pools, which in turn release carbon gradually back into the atmosphere. Thus, the carbon sequestration rate within younger growing forests is the greatest, and the carbon pools stored within older forests is much larger (Bradford and Kastendick, 2010).

However, these carbon sinks also have the potential to turn into net carbon sources through a number of means, including deforestation, disease, insect infestation and poor forest management. Older forests can also be net carbon emitters due to a combination of higher decomposition rates and lower sequestration rates. Deforestation, or the permanent change of forested land to non-forested land, accounts for 20% of global greenhouse gas emissions (Parker et al., 2008).

Policy Context

The field of forest carbon projects is in its infancy: many international, national and provincial policies are new or remain in the development phase. The table below will focus on BC's policy only.

Table 14 Summary of BC policies supporting climate change and forest carbon offset projects (Forest carbon portal, 2011).

Year	Name	Description
2007	Greenhouse Gas Reduction Targets Act	This Act sets legislated reduction targets for greenhouse gas emissions. To learn more, visit the BC Ministry of Environment's website: http://www.env.gov.bc.ca/cas/legislation/index.html . The Act itself can be reviewed at the website of the Legislative Assembly of British Columbia: http://www.leg.bc.ca/38th3rd/1st_read/gov44-1.htm
2008	Greenhouse Gas Reduction Act	This Act has three stipulations: it creates industry emissions standards, establishes the groundwork for a cap & trade system, and promotes renewable fuels. To learn more, visit the BC Ministry of Environment's website: http://www.env.gov.bc.ca/cas/legislation/index.html . The Act itself can be reviewed at the website of the Legislative Assembly of British Columbia:

Year	Name	Description
		http://www.leg.bc.ca/38th4th/3rd_read/gov18-3.htm
2008	Western Climate Initiative	The Western Climate Initiative (WCI) involves several Canadian provinces and U.S. states, and endeavors to build a cap-and-trade market trading system. More information about WCI is provided on page 25 and online: http://www.westernclimateinitiative.org/
2008	Carbon Tax Act	This Act provides an economic incentive for reducing GHG emissions by establishing a price for GHG emissions. To learn more about the carbon tax, visit the BC Ministry of Environment's website at: http://www.env.gov.bc.ca/cas/legislation/index.html .
2008	Pacific Carbon Trust	The Pacific Carbon Trust (PCT) is a BC provincial crown corporation tasked with acquiring greenhouse gas offsets to support the government's target of becoming carbon-neutral by 2010 (Pacific Carbon Trust, 2010). More information is provided under the Selling Offsets section, starting on page 25. More information can also be found by visiting PCT's website: http://www.pacificcarbontrust.com/
2010	BC's first conservation project	Announced in 2010, the Denman Island Conservation Project will protect over 750 hectares of ecologically sensitive lands distributed over 18 properties on Denman Island. See page 17 for more information about this and other recent projects implemented in BC, or visit the Forest Carbon Portal Website: http://www.forestcarbonportal.com/projects
2011	BC's Draft Forest Carbon Offset Protocol	The purpose of this protocol is to help "guide the design, development, quantification and verification of BC forest carbon offsets from a broad range of forest activities on private and public land in BC" (BC Ministry of Environment). To learn more about BC's Forest Carbon Offset Protocol, visit the BC Ministry of Environment's website: http://www.env.gov.bc.ca/cas/mitigation/fcop.html

Three Phases to a Carbon Project

As with other long-term projects, the successful implementation of a forest carbon project requires a good understanding of all project phases. A project developer should consider the following steps in Table 2 below for the project's planning, implementation and monitoring phases:

Table 15 Summary of the 3 phases of a Forest carbon offset project. (Forest carbon portal, BC Ministry of Environment).

	Phases	Sub-phase	Description
1	Planning	a) Conceptualization	i) Define project goals
			ii) Define project location and scale
			iii) Identify stakeholders
			iv) Engage community
		b) Proposal Development	i) Define project boundary
			ii) Describe project activities: describe as far as possible all of the activities that will result in an increase in carbon sequestration.
			iii) Choose an appropriate carbon standard (more on this later)
			iv) Identify carbon pools, which vary according to the chosen carbon standard
			v) Design quantification system
			vi) Describe Baseline Scenario, which is the amount of carbon that would be present in the project area if the forest carbon project were not to proceed
			vii) Calculate Baseline carbon, project carbon and the predicted additionality
			viii) Estimate the project's environmental and socio-environmental impacts
			ix) Monitoring protocols and methods
		c) Appraisal & Approval	i) Institutional arrangements, such as an independent audit to validate and verify the project
			ii) Review by Community
2	Implementation	a) Select staff and conduct training	
		b) Implement project activities	
		c) Establish infrastructure for carbon monitoring	
3	Monitoring	a) Return to the project site to ensure the carbon sequestration occurs as planned	
		b) Carbon sequestration requires validation by an auditor.	

A key criterion of the project validation process is that both the project area and its associated carbon benefits are held under the control of the project developer. Therefore, ownership is a critical issue as project developers must have rights to the carbon sequestered for the duration of the project. This is usually tied directly to land ownership, of which there are five categories in

BC: federal, provincial, local government, aboriginal and private, P. Skirivanos (personal communication, December 6, 2011). According to most standards, a First Nation is treated as any other project developer in this regard; they can own and lease land, or enter into some form of agreement with whichever authorities have jurisdictional control over the project area and associated carbon benefits P. Skirivanos (personal communication, December 6, 2011).

There are few restrictions for initiating a forest carbon project on privately owned land, including land owned by First Nations, or on Indian Reserves. However, clarity of carbon ownership varies widely for the remaining land ownership types, including the vast majority of forested land in BC. The province of British Columbia, on behalf of the Crown, claims to have jurisdictional authority over the forest resources within British Columbia, including carbon rights. The province of British Columbia, on behalf of the Crown, can transfer specific rights to use forest and associated resources on Crown land through various types of tenure agreements (Forest Carbon Protocol, 2011). First Nations considering forest carbon projects on crown land will likely be required to enter into some form of tenure agreement with the province. Although the format of these tenures remains unclear, it must contain provisions which allocate some or all carbon benefits to the tenure holder P. Skirivanos (personal communications, December 6, 2011). A new, area-based tenure specifically designed for First Nations, called the First Nations' Woodland License, could potentially satisfy these required provisions: it provides exclusive right to harvest timber; manage and charge fees for botanical forest products; practice aboriginal stewardship; protect traditional use practices; and should eventually include provisions for carbon as well P. Skirivanos (personal communications, December 6, 2011).

Conclusion

Forest carbon projects have the ability to offer significant financial, environmental and social opportunities to BC First Nations. However, potential project developers should proceed with caution. As with other long-term projects, the successful implementation of a forest carbon project requires a good understanding of all phases of the project, beginning with project planning, continuing on with its implementation, and ending with monitoring. Knowledge is critical, as forest carbon projects are complex and require careful planning, preparation of financial and human resources, and an understanding of all risks involved P. Skirivanos (personal communications, December 6, 2011).

The methods and procedures which are used to develop forest carbon projects are still in their infancy. Further solidification of regulations, standards, and methodologies is required before greater participation is seen from project developers and investors. In addition, the science behind forest carbon is still developing, particularly in areas which examine the links between carbon sequestration rates, carbon storage, and tree and forest life cycles. Methods for efficient and accurate remote measuring of forest carbon are still being developed. Early investors and adopters who are rushing into carbon projects to profit from perceived easy wealth may not necessarily value the social and environmental aspects of projects P. Skirivanos (personal communications, December 6, 2011).

Forest carbon projects are long-term investments and their associated benefits may not be apparent for many years. Accordingly, First Nation project developers are advised to proceed carefully, with patience, and to be well versed in the range of risks involved. However, collective experience and knowledge is growing, and there is hope that an effective and transparent global carbon market with meaningful First Nation participation will emerge within the next five to ten years P. Skirivanos (personal communications, December 6, 2011).

Appendix D Community cover letter for chief and council (UBC letterhead)

[inserted date]

Re: (Untitled)

Dear Chief and Council,

I am writing to you today to introduce, or re-introduce myself; my name is Lori Sparrow. I am a graduate student at the University of British Columbia taking my Master of Science in Forest Sciences, under the supervision of Dr. Gary Bull, Associate Professor at the University of British Columbia. Other members in my research committee are Dr. George Hoberg, University of British Columbia; Dr. David Cohen, University of British Columbia; and Dr. Ron Trosper, University of Arizona.

In British Columbia (BC), the provincial government approved of a forest carbon offset protocol for carbon offset projects.

The purpose of this study is to examine: 1) To identify the cultural, social, environmental and economic criteria used by selected First Nations to evaluate potential forest carbon offset projects; 2) To assess the First Nation's awareness of forest carbon benefits; 3) To identify the preferences for agreement for forest carbon offsets attractive to First Nations; and 4) To evaluate how different agreements will support First Nation participation in carbon offset projects.

I wish to gather information on carbon offset perceptions, understandings and preferences in approaches to forest carbon management of potential carbon offset within (Name) First Nation territory. I propose to interview Chief and Council, Forestry Manager and one Elder from the community. This information will assist in a greater understanding of carbon management in

(Name) First Nation territory, as well as, policy development and influence on approaches for potential carbon offset strategies.

I am hoping you will consider permitting my presence in the community for the purposes of this research. My visits would be to meet with Chief and Council, Forestry Manager and Elders willing to participate in a short interview (45 minutes to an hour) or to simply share their thoughts or experiences. Participation in this study is voluntary; participants do not have to answer all the questions and can withdrawal at any time. The interviews will be audio-recorded to ensure accurate data collection.

There is no physical and psychological harm or injury to reputation or privacy anticipated as a result of this study. All participants will be: i) asked to sign a consent form prior to the interview and after disclosure of the research purpose, ii) given the explanation as to their voluntary involvement, their right to not answer any question or withdraw from the study at any time without prejudice, and iii) informed of the potential risks.

Participant identities will remain anonymous and kept confidential, unless they explicitly give written consent to be identified in research publication(s) and public presentations. Otherwise data will be written and potentially published in aggregate form. A copy of the research description, contact information and consent form will be given to the participants at the interview.

While every precaution will be taken to ensure privacy, there is a risk that identifiable information provided by a participant may be recognized.

All personal information will be replaced by a coding system so individual identities remain anonymous, and will be kept confidential and separate from the research results. After the information has been analyzed, it will be securely stored at the University of British Columbia

for five years and at the (Name) First Nation office for twenty years. (Name) First Nation is also bound to keep this information secure, anonymous and confidential, including any future use of the information by (Name) First Nation or by a third party authorized by (Name) First Nation. The research data may also be used by me in future studies, and again, all personal information will remain anonymous, kept confidential and separate from the research results.

If you have any questions or concerns, please do not hesitate to contact myself or my supervisor at the contact information provided below. You may also contact the Research Ethics Board at the University of British Columbia at (604) 827-5114. Thank you for your time and consideration.

Sincerely,

Lori Sparrow and Dr. Gary Bull, Associate Professor

Faculty of Forestry

University of British Columbia

Vancouver, BC V6T-1Z4

Appendix E Community consent form (UBC letterhead)

(Untitled)

I/We (Name) First Nation have read and understand the cover letter provided by Lori Sparrow for the research project entitled “Untitled”.

I/We understand that the data collected for this research project will be securely stored at the University of British Columbia for a period of five years, and at the (Name) First Nation office in for twenty years.

I/We understand that (Name) First Nation may at some future point use the data from this research project for other studies, or authorize a third party to use the data. (Name) First Nation, or any party authorized by (Name) First Nation, are required to maintain my anonymity and confidentiality. I/We also understand the researcher may at some future point use the data from this research project for other studies, but will maintain the anonymity and confidentiality of the participants.

I/We understand participants are volunteers in the study and can choose not to answer any question and may withdraw from this research project at any time.

I/We also understand the risks and benefits that may result from this study.

I/We (Name) First Nation agree to the presence of the researcher in the community to conduct interviews and aware the conversations with the researcher are to be audio recorded for accuracy.

I/We understand participants in the research will remain anonymous in any publication and/or public presentation of research findings and that if a participant wishes to be identified, must explicitly agree to have their identity revealed, and sign a statement to that effect with a witness by a third party.

I/We (Please print name) First Nation agree to this research being conducted in the community.

☐ I/We wish to be provided with a summary of the research results.

Dated: _____

Signature of Community Leadership

Signature of Community Leadership