

OFFICE OF THE CHIEF FORESTER

2022–23

INNOVATION, BIOECONOMY AND INDIGENOUS OPPORTUNITIES BRANCH



Ministry of
Forests



INDIGENOUS FOREST BIOECONOMY PROGRAM, ACCELERATOR, *and* INDIGENOUS FORESTRY PROGRAM

ANNUAL REPORT

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1. Executive Summary

Through the Office of the Chief Forester, the Innovation, Bioeconomy and Indigenous Opportunities (IBIO) branch delivers three programs that support increased economic development and participation in the forest sector by Indigenous people. The Indigenous Forest Bioeconomy Program (IFBP), begun in 2019, provides targeted support for Indigenous partners to create new bioproducts, fueling the revitalization of BC's forest sector. The IFBP was preceded by the Indigenous Forestry Program (IFP), which has provided support to Indigenous partners for over a decade. In 2022-23, the IFP funded projects in the areas of forest management and the production of conventional forest products. In order to support projects that qualify for IFBP funding but that are further along in the commercialization process, the Accelerator funding stream was added in 2022.

The IFBP, Accelerator, and IFP exist to support Indigenous communities to unlock the full suite of economic, social, and environmental benefits that derive from their participation in the forest sector with partners across BC, through specific project support. Today, the forest sector in BC faces many challenges, such as high operating costs, significant forest disturbances, and an increasingly competitive global forest products market. These challenges render the IBIO funding programs essential to ensuring that Indigenous communities are supported to navigate these challenges and thrive as full participants in the natural resource sector.

Projects delivered over the 2022-23 cycle by the IFBP include supporting the development and manufacture of high value bioproducts such as tannins and non-timber forest products, support for topsoil and composting, and a wide-ranging study on biochar. The Accelerator stream fostered value-added manufacturing, funded research into novel wood products, and contributed to a housing project that piloted value-added wood elements. The IFP has provided support for foundational forestry activities such as biomass inventories, contractor diagnostics, uses for residual fibre, and a sawmill extension. In addition, IFP projects involving the sale of firewood often dovetailed with other projects, and can be considered at the end of each fiscal year depending upon the availability of funds.

In the 2022-23 project cycle, the three programs:

- Delivered 41 projects: 17 through the IFBP; 7 through the Accelerator; and 17 through the IFP
- Collaborated on these projects with 33 First Nations and 5 Indigenous-owned businesses
- Created 168 new jobs, and supported projects with the potential to create many more jobs

The above numbers capture a snapshot of the impacts of these programs, but do not provide the full story. To give insight into the impacts on less easily quantifiable benefits such as supporting cultural values and self-determination, project descriptions are provided in the remainder of the report, and these are organized by geographic location.

The foundational funding for the IFBP is provided through the *Coast Forest Sector Revitalization* initiative, and this year funding for the program was expanded through the *New Forest Economy*. Funding for the Accelerator stream is from *CleanBC*. The IFBP and Accelerator are guided by the goals, principles and objectives of the [Indigenous Forest Bioeconomy Framework](#), which was developed through collaboration and engagement with numerous First Nations and Indigenous organisations. The IFP also follows these principles and shares many of the objectives. As part of implementing the *B.C. Declaration on the Rights of Indigenous Peoples Act* and the Truth and Reconciliation Commission *Calls to Action*, the Ministry's Indigenous Forest Bioeconomy team takes a collaborative approach to identifying and pursuing project opportunities that reflect Indigenous interests. As the programs focus on specific on-the-ground projects, they are an embodiment of reconciliation in action. The three funding streams aim to remove as many barriers to participation as possible by engaging with potential participants early on, and breaking down larger projects into distinct phases within a fiscal year. The nature of novel product development within the IFBP and the Accelerator leads this year's projects to fall across the [project development scale](#) that moves from scoping to commercialisation and scale-up. The focus of these projects also covers a range of bioproducts.

2. Introduction

First Nations in BC are increasingly active participants in forestry activities that provide both economic opportunity and community sustainability. BC's Indigenous Forestry Program (IFP) has supported this development for over a decade through partnerships with over 100 Indigenous communities and/or organisations in forest sector economic development. The 2022-23 annual report marks the fourth iteration of a compendium of projects delivered as part of both the IFP and the IFBP, and adds the Accelerator stream. This report aims to describe the key activities, outcomes and impacts of these programs.

Forest bioeconomy development is based on using forest biomass as the key input for producing consumer goods and/or industrial products or bioproducts while displacing petrochemical-based products throughout our economy. A forest bioeconomy uses a broader lens than conventional forestry, to consider a wide range of product and resource development opportunities beyond conventional products like lumber, or pulp and paper products. The overarching goal is to maximize the value of forest biomass, within the context of a forest bioeconomy. Value is viewed as a holistic measure. It can encompass: environmental values such as sustainable forest management and the production of environmentally friendly forest bioproducts; economic values such as profitable revenue streams from the manufacture and marketing of these bioproducts; and social values such as addressing community infrastructure needs and providing job opportunities for communities around the province in forest operations, manufacturing, high-tech design and production applications, and artisanal applications.

2.1 Indigenous Forest Bioeconomy Framework

The Indigenous Forest Bioeconomy Framework guides project development within the IFBP, and aims to provide another platform for Indigenous-centric opportunities in the natural resource sector by responding to a community's interests and needs through collaboration and partnerships. The principles, goals, objectives, and economic development pathways reflected in this Framework are the result of engagement and collaboration with numerous First Nations across the province over the past years. The principles of this framework also guide the work of the Accelerator and the IFP. As we continue to work with First Nations on Indigenous forest bioeconomy opportunities, we will continue to improve and refine the Framework.

Goal, Principles and Objectives

The Framework has one overarching **goal**: To promote the development of forest bioeconomy opportunities that respect and support Indigenous community culture, values, and traditional territories.

To achieve this goal, the Framework adopts the following **principles**:

- i. Support is provided in addition to and independent of negotiated treaty or non-treaty agreements (i.e. we use a collaborative approach not directly tied to government-to-government agreement processes);
- ii. Supports reconciliation objectives, and constitutional and historic obligations, but is not an alternative to land claim negotiations;
- iii. Recognizes and prioritizes Indigenous values, traditions, and knowledge;
- iv. Supports Indigenous community and/ or Indigenous business driven projects designed to meet community needs while also supporting regional economic development opportunities;
- v. Supports collaboration with industry and business, as well as across Ministries and agencies, to meet common objectives; and
- vi. Considers and supports Indigenous community capacity development.

The Framework is supported by three objectives:

Objective 1: Identify and prioritize bioeconomy opportunities

- a. Engage with Indigenous communities to identify opportunities and priorities
- b. Develop action plans to realize priorities with relevant partners

Objective 2: Develop bioeconomy opportunities

- a. Generate community-based employment and businesses
- b. Build capacity for diversification and scalability

Objective 3: Increase participation in the natural resource sector

- a. Prioritize clean tech and innovative projects that contribute to sustainability in natural resource management
- b. Foster Indigenous entrepreneurship and participation in the natural resource sector

Economic Development Pathway

The Framework uses a community/culture-centric and strength-based approach through an economic development engagement pathway. The model can be described as a holistic view of interconnectedness and a collective process of inquiry and decision-making to encourage harmony and empowerment within natural resource economic development opportunities. The Framework supports Indigenous communities’ governing their own economic activities to build a self-sustainable community.



2.2 Policy Context

The assistance provided by the IFBP, Accelerator, and IFP supports Indigenous economic development in targeted areas. All three programs focus on specific on-the-ground projects, and as such are an embodiment of reconciliation in action, furthering the implementation of the *B.C. Declaration on the Rights of Indigenous Peoples Act*. The IFBP supports the development of a forest bioeconomy that creates new opportunities for using residual fibre to manufacture cutting-edge products that help drive forest sector revitalization. 2022-23 marked the fourth year of IFBP projects, with funding for this program coming through the *Coast Forest Sector Revitalization* and the *New Forest Economy*.

Projects such as the Biohub, delivered through the IFBP, focused specifically on changing the supply chain logistics to increase forest biomass capture, a key component under innovation identified in the *Canadian Council of Forest Ministers Forest Bioeconomy Framework for Canada*. New harvest operations models are needed to facilitate increased capture of, and access to, forest biomass to meet current and future demand while harvest levels continue to decrease. Respecting Indigenous people as key partners in the forest bioeconomy supports the first pillar of this Framework.

IBIO-funded projects in the forest bioeconomy foster positive climate action by increasing the storage of carbon in forest biomass, and displacing carbon intensive alternatives. The CleanBC priority of helping communities reduce dependence on diesel and switch to bioenergy is facilitated, for example, through a Combined Heat and Power project.

2.3 Report Format

Following the executive summary in Chapter 1, and descriptions of the IFBP, the Accelerator stream, and the IFP in Chapter 2, this report describes the projects completed in 2022-23. In Chapter 3, a summary of our aggregated project statistics provides an overall picture of impacts of all programs this year. Chapters 4 to 6 describe each project in detail, based on where they are located. Chapter 4 details projects in the North, Chapter 5 in the South, and Chapter 6 on the Coast. Descriptions are provided for each project, as well as the challenges that each project sought to overcome, and the outcomes achieved.

3. Summary of Projects

This section provides a summary of all activities supported through the Indigenous Forest Bioeconomy Program (IFBP), the Accelerator stream, and the Indigenous Forestry Program (IFP). Individual projects are then described in Chapters 4 to 6.

3.1 Geographic Distribution



3.2 Community Engagement

In 2022-23, the Indigenous Forest Bioeconomy program engaged with 33 different Indigenous communities across B.C., and successfully delivered 34 projects through the IFBP, Accelerator, and IFP. Engagement with communities was done through a mailed outreach campaign, and through web meetings and phone calls. On top of this, the program staff prioritise face-to-face meetings in the community to establish and build strong relationships with project partners. This year, outreach trips included visits to First Nations and mill sites on Vancouver Island.

3.3 IFBP and Accelerator: Range of Bioproducts





This includes projects within the Indigenous Forest Bioeconomy Program, which supports the development of bioproducts, as well as projects within the Accelerator stream. The table below provides a summary of where all the projects fall within the bioproduct categories. Generally, the bioproducts on the right of the table represent higher value for forest products compared to the bioproducts on the left.

2	1	8	4	7	1	2
Bioenergy	Biomass Supply Transformation	Residual fibre for value-added	Non-Timber Forest Products	Novel Bioproducts	Biochemicals	Advanced Biomaterials
						

Note that some projects spanned several bioproduct categories and therefore are counted in multiple categories.

3.4 IFP: Project Categories

The Indigenous Forestry Program supported projects in the following categories.

4	7	3	6
Foundational Forest Products	Use of Residual Fibre	Engineering or Feasibility	Innovative Products
			

3.5 IFBP: Project Development Scale

The table below highlights, generally, where on the project development scale the bioeconomy projects fell this year. To be able to support initiatives that develop new products over several program cycles, projects are generally broken down into phases. Projects usually move one or two phases up the scale over a project cycle. However, it can be both possible and desirable for projects to move down the development scale and back up as they add new manufacturing capabilities or expand the range of bioproducts they produce.

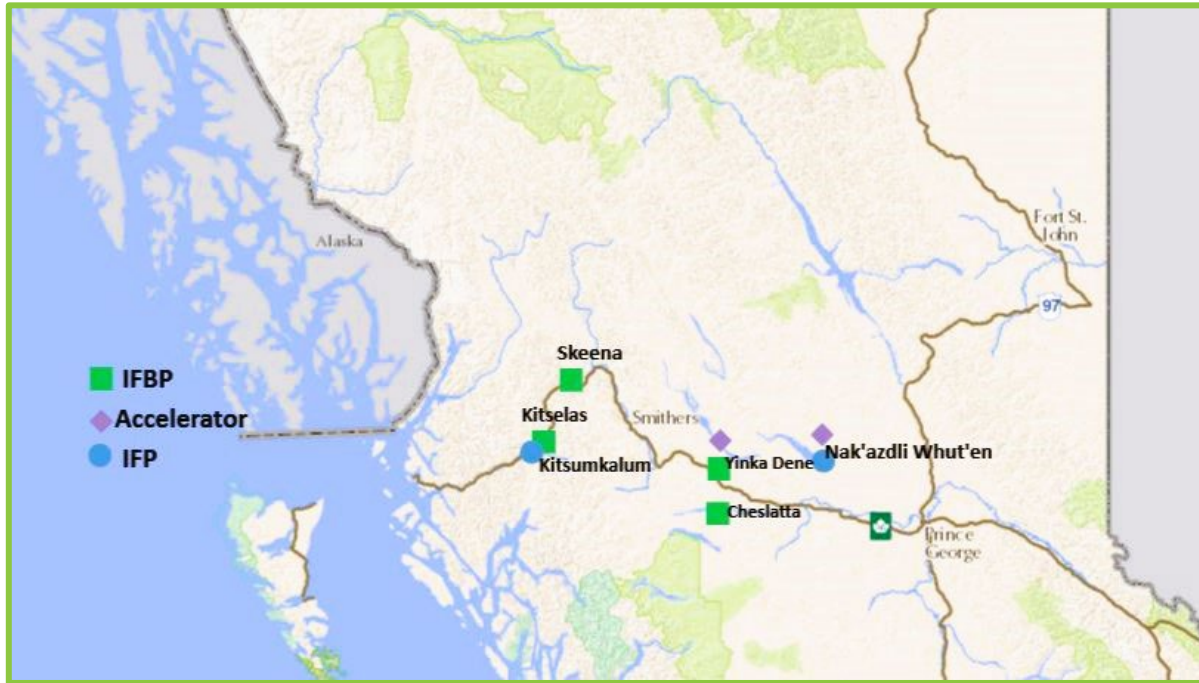
3	9	15	3	3	3	1
Scoping (Research)	Assessment (Feasibility)	Testing/pilot (Prototype)	Validation (Performance)	Demonstration (Proof of concept)	Commercialization (Implementation)	Scale-up (Expansion)



3.6 Employment

Indigenous Forest Bioeconomy Program	99 Jobs Created	106 Potential Jobs in Development	13 Jobs Maintained
Indigenous Forestry Program	54 Jobs Created	54 Potential Jobs in Development	26 Jobs Maintained

4. North Projects



4.1. Indigenous Forest Bioeconomy Program – North

4.1.1 Cheslatta – Non-Timber Forest Products – Cheslatta Carrier Nation, Southbank, BC

The Cheslatta Carrier Nation, strategically located on the southern shores of Francois Lake, embarked on an ambitious project to explore the potential of non-timber forest products (NTFPs) within their territories. This initiative aimed to identify the most abundant NTFPs and evaluate their suitability for bioeconomy applications. The project garnered widespread community support, resonating with the Nation's deeply held principle, encapsulated in their motto, "Footsteps on the Land."

Central Challenge

The primary challenge faced by the Cheslatta Carrier Nation was the lack of comprehensive data regarding the abundance and diversity of NTFPs across their extensive and varied landscape. Furthermore, understanding the potential market opportunities for these products was crucial. This information was imperative to conduct an initial assessment of the feasibility and necessary steps to establish a sustainable forest bioeconomy-based enterprise.

Project Outcomes

The project successfully assessed the commercial viability of a business centered around non-timber forest products. It also provided a more nuanced understanding of the region's biomass resources. The initial scoping report revealed that the unique climatic conditions in Cheslatta's territory foster

the growth of valuable NTFPs, which possess significant commercial, environmental, and cultural importance.

The report also underscored areas requiring further investigation, particularly focusing on aspects such as transportation logistics and workforce training. This comprehensive approach not only aimed to bolster the economic prospects of the Cheslatta Carrier Nation but also sought to align with sustainable and culturally respectful practices. The findings of this project are expected to pave the way for innovative strategies in harnessing the untapped potential of NTFPs, thereby contributing to the broader goals of environmental stewardship and economic development within the Nation.

4.1.2 Kitselas Development Corp – Organic Waste Composting Study – Kitselas Indian Band, Terrace, BC



The project embarked on a comprehensive scoping study aimed at assessing the economic viability of establishing a composting facility on the Kitselas First Nation's land in the northwest region of British Columbia. This initiative was designed to leverage the composting process in transforming forestry waste materials into a high-quality, nutrient-rich compost blend. This blend would then be utilized to bolster local agricultural practices, particularly in food production.

Central Challenge

The Kitselas community, situated in a region with significant forestry operations, was confronted with a series of local challenges. These included operating within narrow profit margins and dealing with a substantial volume of forestry waste. Historically, this waste was disposed of through roadside burning each year, a practice both environmentally detrimental and economically inefficient. In response to these challenges, the Kitselas Development Corporation (KDC) sought to not only address these environmental concerns but also to foster business development, training, and employment opportunities within the community. The overarching goal was to transform these challenges into sustainable development opportunities.

Project Outcomes

The comprehensive feasibility report, a culmination of the study, revealed promising results. It indicated that the KDC team could indeed develop an economically sustainable product. This product

would be the result of a synergistic combination of locally sourced inputs, including wood waste from forestry operations, fish waste, and household compost. The integration of these materials was projected to yield a high-quality compost mixture. This mixture, in turn, could significantly enhance local agricultural practices, particularly in the realm of food production. The report highlighted the potential for this project to not only provide a sustainable solution to waste management but also to contribute positively to the local economy and community well-being. The findings of the study laid a solid foundation for the next steps in project development, emphasizing the feasibility and potential benefits of the proposed composting facility.

4.1.3 Tea Creek Enterprises – Composting Business – Skeena, BC

Tea Creek Enterprises, an Indigenous-led initiative, represents a pioneering approach in the realm of land-based, culturally sensitive training and employment skill development in the northwestern region of British Columbia. Collaborating closely with the First Nations communities of Gitwángak, Gitanyow, Gitlaxt'aamiks, and Witset, Tea Creek Enterprises has established itself as a supporter of innovation and cultural integration in skills development. At the heart of Tea Creek's mission is the dual objective of fostering food sovereignty and enhancing pre-employment skills through a unique blend of mentorship and practical training. This approach not only aligns with the cultural values and traditions of the Indigenous communities but also addresses the pressing need for sustainable practices in food production and land management.

Central Challenge

The central challenge that Tea Creek Enterprises aimed to address through its project was the innovative utilization of residual wood chips, primarily focusing on their potential as a soil amendment to bolster community agriculture projects. This challenge is particularly significant in the context of sustainable environmental practices and the promotion of local agriculture.

Project Outcomes

The funding facilitated the acquisition of essential equipment, including saws and a specialized mulching head. This equipment plays a crucial role in transforming residual fibre from forestry activities into valuable wood chips. These chips are then employed in various applications such as mulching, composting, and soil amendments, thereby contributing significantly to the creation of healthy, sustainable conditions for food production within the community.

Moreover, the saws acquired through this project are not merely tools for material processing; they also serve as instrumental resources in skills training programs specifically designed for Indigenous individuals. These programs aim to enhance local employment opportunities by equipping participants with practical skills and knowledge, thereby fostering economic growth and self-sufficiency within the Indigenous communities.

Tea Creek Enterprises, through its innovative and culturally integrated approach, has not only addressed a key environmental challenge but has also laid the groundwork for sustainable community development, food sovereignty, and skill enhancement among Indigenous populations in northwestern British Columbia. The success of this project stands as a testament to the potential of combining traditional knowledge with modern techniques for the betterment of communities and the environment.

4.1.4. Yinka Dene Economic Development LP – Feasibility for Novel Wood Insulation – Wet’suwet’en First Nation, Fort St James, BC

The primary objective of this initiative was to engineer lignocellulosic foam that not only aligns with the cost and performance benchmarks of existing extruded-polystyrene and polyurethane products but also serves as an efficient alternative for thermal insulation panels. This ambitious project was underpinned by a proposal to manufacture high-performance, fire-retardant thermal insulation foams utilizing forest waste. This innovative approach leverages the cutting-edge technology developed collaboratively by the Faculty of Forestry (FOF) and the Bioproducts Institute (BPI) at the University of British Columbia. A key stakeholder in this endeavor is the Yinka Dene Economic Development Limited Partnership (YLP), an entity wholly owned by the Wet’suwet’en First Nation (WFN). YLP is dedicated to enhancing community wellbeing, with a focus on the pillars of culture and language, training and employment, health, housing, and governance.

Central Challenge

The market currently offers wood fibre insulation boards that unfortunately fall short in thermal insulating performance when compared to their counterparts made from polyurethane, expanded polystyrene, and extruded polystyrene. The aspiration to develop thermal insulation foam boards from natural fibres is driven by the potential to supplant these comparable petroleum-based products. The evaluation criteria for these natural fibre-based products include mechanical performance, thermal conductivity, fire retardancy, and stability. In addition to these technical objectives, WFN/YLP aimed to generate employment opportunities, enhance skills and training, foster economic growth, and contribute significantly to climate solutions within the forest sector.

Project Outcomes

The Sustainable Functional Biomaterials laboratory, a joint venture of BPI/FOF, has made significant strides in the development of a robust wood-based material. This material is not only fully biodegradable but also exhibits superior thermal conductivity. Furthermore, the team has successfully developed a wood fibre composite that demonstrates exceptional fire retardancy alongside satisfactory thermal conductivity. This progress marks a pivotal step in a multi-year collaborative project between YLP and UBC, focusing on the exploration and development of thermal insulation derived from forest harvest residuals. This project is a testament to the commitment to innovation and sustainability in the forest sector, aiming to revolutionize the industry with eco-friendly, high-performance alternatives to traditional insulation materials.

4.2. Accelerator – North

4.2.1 Nak'azdli-Deadwood – Commercial Plant Design and Capital Purchase, Nak'azdli Whut'en First Nation, Fort St. James, BC



The project entailed a business partnership between Nak'azdli Development Corporation and Deadwood Innovations Ltd. to support the commercialization of a novel forest bioproduct. Deadwood has developed a proprietary method of converting low-grade fibre into a new wood product that can be

used as a substitute for lumber in various applications. The project facilitated the design of Deadwood's pilot plant to scale up to a 30,000 m³/year commercial demonstration operation. Utilizing low-value conifer, and salvaged wood to produce value-added, carbon-storing, construction-grade engineered wood products, this collaboration aligns with the Indigenous Forest Bioeconomy Framework, and clean energy initiatives.

Central Challenge

The central challenge this project sought to address is the efficient utilization of low-grade wood, which was typically underutilized or considered waste in traditional lumber production. The resources being developed by Deadwood can contribute to a circular economy by extending the useful life of wood products and reducing waste. Additionally, the project aimed to extend the lifespan of biomass-based products, reducing the burning of beetle-killed trees and low-value logs, and mitigating climate change by storing carbon.

Project Outcomes

Designing the scale-up of the pilot plant to a commercial operation, the project aimed to ascertain the feasibility and commercial potential of Deadwood's innovative technology. In addition, the project supported the purchase of a larger automated press that will contribute to ongoing sample production and future research and development. The expected outcomes include the production of consistent, engineered wood products, the extension of product lifespan, and the promotion of a circular economy.

4.2.2 Yinka Dene Limited Partnership – Capital Purchase for Wood-Fibre Bio-Foam Pilot Plant, Wet’suwet’en First Nation, Fort St. James, BC

The Yinka Dene Economic Development Limited Partnership (YLP) was funded to purchase lab equipment, including an ultra-fine grinder. The equipment will advance research on wood-based foam compositions, a novel biodegradable foam material derived from forest harvest residuals, with the aim of refining the product for the protective packaging market.

Central Challenge

The central challenge centred on developing sustainable foam products to replace extruded-polystyrene foam used in protective packaging, an expanding market due to increased online shopping. Traditional foam packaging materials are derived from non-renewable resources and have significant environmental impacts. The project sought to utilize wood-based foam compositions derived from post-harvest residuals, which have the potential to offer a more sustainable alternative that can contribute to climate action goals.

Project Outcomes

The acquisition of advanced laboratory equipment marks a significant milestone in this project. This equipment is pivotal in facilitating cutting-edge research and development in the realm of wood-based foam compositions. By leveraging the latest technology and assembly strategies developed at the UBC Sustainable Functional Biomaterials lab, the project is well-positioned to enhance the foam board's properties. This includes improvements in mechanical performance, thermal conductivity, fire retardancy, and overall stability. Such advancements are crucial in meeting the stringent requirements of the protective packaging market and ensuring the product's viability in real-world applications. The project's progress in refining these wood-based foam compositions not only demonstrates a commitment to innovation but also underscores the potential of novel materials in revolutionizing industry practices, thereby contributing to a greener and more sustainable future.



4.3. Indigenous Forestry Program – North

4.3.1. Kalum Ventures, Engineering Report for Old Mill, Kitsumkalum First Nation, Terrace, BC

Kalum Ventures manages forests and operations through several forest licenses within the territory of the Kitsumkalum, the “People of the Robin”. Kalum Ventures wished to learn whether they could revive an old mill, located just north of the Kitsumkalum Indian Reserve, instead of constructing a new facility.

Central Challenge

The available sawmill was shuttered in the early 1990’s when Kalum Wood Products last used the structure. Preliminary inspections showed that the building was still useable. However, it was unknown what the costs would be to revive the mill and to possibly make it economically viability.

Project Outcomes

The project resulted in an engineering assessment as the first step to revive the long-abandoned sawmill, assessing the integrity of the original structure and determining if the cost of reviving the mill for modern milling was economically feasible. Next steps could include producing dimensional beams for drill mats and other regional industrial markets.

4.3.2. Kalum Ventures, Firewood Business, Kitsumkalum First Nation, Terrace, BC

The project funded Kalum Ventures, owned by Kitsumkalum First Nation, to improve operational efficiency for their existing firewood business.



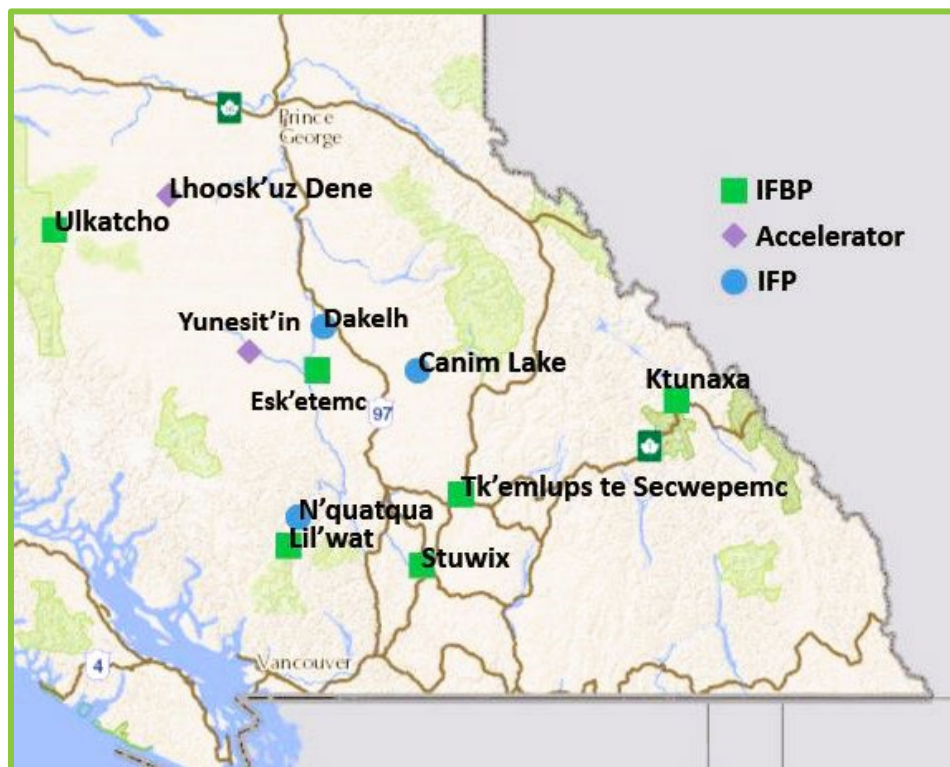
Central Challenge

Goals included utilizing the full profile of the stand in the Terrace area, providing employment and generating revenue. The hope was to increase the production of firewood in order to both improve economic efficiency and address community firewood needs.

Project Outcomes

The project funded a firewood processing unit, including a feeder, splitter head, and other equipment, resulting in better operational efficiency for the existing firewood business.

5. South Projects



5.1 Indigenous Forest Bioeconomy Program – South

5.1.1 Alkali Resource Management – Biochar Production Trial with Tigercat and Takachar Systems – Esk'etemc First Nation, Alkali Lake, BC

Alkali Resource Management (ARM), an integrated forest management enterprise established by the Esk'etemc community, embarked on a research trial to assess the efficiency, yield, and costs associated with two biochar production systems: the Tigercat Carbonator and the Takachar system. The primary objective was to determine the feasibility of biochar production using diverse feedstocks available within the Esk'etemc people's traditional territory.

Central Challenge

To mitigate wildfire risks, ARM has been actively involved in biomass harvesting for boiler system applications and the execution of controlled burns. The challenge was to test available biochar systems to gain information on efficiency and outputs.

Project Outcomes

- **Tigercat Carbonator:** The Tigercat Carbonator was tested using Douglas Fir stem top chunks. It was observed that the moisture content in the input material led to a diminished biochar yield. Despite this, the trial provided valuable insights into the biochar processing cost, which will be pivotal for evaluating the commercial viability of the venture. Furthermore, the Carbonator showcased its potential to manage wood residue safely, especially in situations where open burning is not a viable option, indicating prospective business opportunities in this area.
- **Takachar System:** the Takachar system underwent testing with wood chips. It was determined that further trials are necessary to pinpoint the optimal conditions for thorough charring. The biochar output was quantified, considering the moisture content of the input. Currently, Takachar is in the process of designing a commercial-scale prototype with the aim of substantially decreasing production costs and introducing an automated system.

5.1.2 Ktunaxa – Biomass Recovery Planning - Ktunaxa Nation Council, Cranbrook, BC

This initiative planned a comprehensive biomass assessment, a project that significantly expanded upon previous research efforts. These earlier studies had evaluated the feasibility of utilizing wood waste as a foundational component for a novel growing medium. This medium was envisioned to be employed by Ktunaxa Enterprises for the ecological restoration of mining sites within the Elk Valley region.

Central Challenge

The core challenge in this post-mining landscape revolves around the restoration of ecological balance, particularly in the absence of an organic growing medium. This vital component is often depleted or entirely removed during the mining development process. Organic materials are crucial not only in providing structural integrity to the landscape but also in serving as a fertile substrate. They offer essential nutrients that are instrumental in supporting revegetation efforts. Such vegetative growth plays a pivotal role in further stabilizing and rehabilitating the slopes, thereby contributing to the overall ecological recovery of the area.

Project Outcomes

The introduction of substantial quantities of organic matter, primarily consisting of woody debris and other soil amendments, holds significant potential in aiding the restoration of the disrupted terrestrial ecosystems. However, a primary concern can be the cost-effectiveness of these organic inputs. The feasibility of sourcing, processing, and applying these materials in a financially sustainable manner can pose a considerable challenge. Exploring innovative approaches to maximize the efficiency and effectiveness of the organic material application involves assessing local sources of wood waste, optimizing processing techniques, and evaluating long-term benefits against initial expenditures.

5.1.3 Lil'wat Forest Ventures – Forest Residual Management Business – Lil'wat First Nation, Lillooet , BC

Lil'wat Forestry Ventures (LFV) delved into the feasibility of producing biochar from forestry residuals. This comprehensive research project aimed to illuminate key aspects concerning the commercial applications of biochar within the North American context. It delved into the various technologies currently available for biochar production, examined the market dynamics surrounding both biochar and carbon credits, and identified potential funding opportunities for the Lil'wat Nation to consider for future project expansion.

Central Challenge

The primary challenge faced by the LFV was to thoroughly understand the commercial viability and the diverse potential applications of biochar. Biochar, known for its versatility, has several promising uses, including as a soil amendment, an animal feed additive, and in wastewater treatment. However, there exists a notable lack of comprehensive data regarding its effectiveness, production costs, and market demand. This challenge was further exacerbated by the variability in biochar quality, which can be attributed to the use of different feedstocks, and the logistical complexities involved in transporting wood waste. These factors necessitated a detailed and methodical investigation to ascertain the feasibility, economic viability, and potential environmental benefits of biochar production, along with an evaluation of the associated technologies.

Project Outcomes

The research conducted by LFV yielded significant insights, revealing that biochar possesses a wide array of commercial applications. Among these, its role as a soil amendment in the agricultural sector emerged as the most prominent and established market opportunity in this situation. The study found that biochar has the potential to substantially improve soil quality, enhance plant growth, and possibly increase crop yields. Additionally, the carbon credit market for biochar is showing promising growth. Platforms such as Puro.Earth and Carbonfuture are actively facilitating the trade of biochar-based carbon credits, indicating a burgeoning market. The research also brought to light the potential economic benefits of by-products generated from the pyrolysis process, such as wood vinegar and syngas. These by-products present additional avenues for economic gain and sustainability, further enhancing the attractiveness of biochar production as a viable venture. In conclusion, the research undertaken by Lil'wat Forestry Ventures has provided valuable insights into the multifaceted applications and market potential of biochar. It has laid a foundation for informed decision-making regarding the expansion of biochar production initiatives, aligning with both economic and environmental sustainability goals, and reflecting LFV's commitment to innovation and sustainable development within the forestry sector.

5.1.4 Lil'wat Forest Ventures – Biochar Production Trial with Takachar System, Lil'wat First Nation, Lillooet, BC



Lil'Wat Forest Ventures (LFV) initiated a research trial to evaluate the yield, costs, and productivity of the Takachar system. The objective was to ascertain its potential application in a biochar production enterprise, leveraging available logging residues. Lil'Wat Forest Venture LP, a subsidiary of the Lil'Wat Nation, is situated near Mount Currie, BC, and serves a community of approximately 2,200 members.

Central Challenge

While LFV possessed an abundance of fibre derived from forest operations and fuel treatments, there existed a significant knowledge gap concerning the productivity and cost implications of various applications for this residual wood. To make an informed decision regarding the feasibility of a biochar enterprise utilizing Takachar technology, LFV needed comprehensive data.

Project Outcomes

Biochar samples were collected, analyzed, and assessed. The productivity of the Takachar equipment was calculated, in terms of financial and biomass costs. Trials confirmed that biochar yield was in the volume expected. The final report pointed to the benefit of future testing and design alterations to enhance production.

5.1.5 Stuwix – Centralized Full-Utilization Biohub Yard, Investigation and Planning Phase, Stuwix Resources Ltd, Merrit, BC

Stuwix Resources Ltd (SRL), a collaborative enterprise owned by eight First Nations within the Merritt region, represents a significant stride in sustainable resource management and community development. These First Nations include the Coldwater Indian Band, Cooks Ferry Indian Band, Lower Nicola Indian Band, Nooaitch Indian Band, Shackan Indian Band, Siska Indian Band, Upper Nicola Indian Band, and Upper Similkameen Indian Band. The overarching vision of SRL is to foster ecosystems and communities that are not only thriving but also sustainable. In pursuit of this vision, SRL embarked on a groundbreaking project to explore the feasibility of establishing a centralized and fully integrated biohub yard. This initiative aimed at minimizing waste fibre while simultaneously catalyzing economic growth and environmental stewardship.

Central Challenge

The prevailing challenge in the region's forestry practices lies in the inefficiencies of the current field cutting system. This system results in a significant amount of waste fibre, including non-merchantable wood, branches, and bark. Such waste not only represents a lost economic opportunity but also hampers the efforts of secondary users who could potentially utilize this residual fibre. In response to this challenge, SRL initiated a comprehensive investigation to determine the viability of transporting whole trees, primarily Lodgepole pine, to a centralized sorting facility. The goal was to enhance the sale and utilization of non-timber fibre, thereby creating a more sustainable and efficient forestry model.

Project Outcomes

The project entailed a thorough examination of existing harvesting operations. A detailed and extensive report emerged from this investigation, offering a nuanced assessment of the feasibility of a centralized biohub yard. This report not only identified potential users and assessed current levels of waste but also proposed strategic plans for implementing a pilot project. One of the key findings was that transporting whole trees could significantly augment fibre utilization, diminish waste, and provide a greater quantity of wood fibre to secondary markets. The processing of long stems into merchantable logs and specialty products is a critical component of this model. Furthermore, the project highlighted the diverse range of products that could be derived from the remaining fibre. These products include clean chips suitable for playgrounds, animal bedding, boiler fuel, compost, mulch, and firewood, thereby demonstrating the potential for a circular economy in the forestry sector.

The efforts of Stuwix Resources Ltd represent a pioneering approach in the realm of sustainable forestry. By reimagining waste as a resource, SRL is not only contributing to the economic prosperity of the First Nations communities and the Merritt area, but is also championing environmental sustainability. This project illustrates the potential of innovative thinking in addressing long-standing challenges in resource management.

5.1.6 Tk'emlúps – Wood Waste Reclamation - Tk'emlúps te Secwepemc First Nation, Kamloops, BC

This project aimed to evaluate the viability of various strategies for the reclamation of wood waste. The Tk'emlúps Nation is committed to attaining self-sufficiency and independence through education and economic development, and its lands support residential, industrial, commercial, agricultural, and other uses.

Central Challenge

The lands under the stewardship of the Tk'emlúps Nation are diverse, encompassing residential, industrial, commercial, and agricultural areas, along with other multifaceted land uses. Tk'emlúps' goals are to find a value-added application for wood waste, to support agriculture, and to provide investment opportunities.

Project Outcomes

Tk'emlúps found that further study is necessary in order to consider the options.

5.1.7 West Chilcotin Forest Products – Biochar Production Trial with Tigercat Carbonator and Takachar Systems – Ulkatcho First Nation, Anahim Lake, BC



West Chilcotin Forest Products (WCFP), owned by Ulkatcho Nation, located near Anahim Lake, BC, sought a research trial to assess the costs and productivity of the TigerCar Carbonator and the Takachar systems.

Central Challenge

WCFP wished to explore biochar manufacturing at the harvest site. Mobile biochar manufacturing could play a key role by disposing of waste wood and reducing the volume of fibre burned at roadsides. Ulkatcho required data to determine whether an existing but new mobile biochar-producing piece of equipment could be operated as a viable business, based on yields and on the operational realities of the equipment. By transforming these wastes into biochar, WCFP aimed to provide a sustainable solution that not only mitigates the negative impacts of open burning but also adds value to the waste by turning it into a useful product.

Project Outcomes

- **Carbonator:** The Carbonator trial utilized three types of biomass: lumber, kiln drying sticks, and logging residue. The results indicated that the Carbonator can effectively produce biochar from these materials. However, the quality and moisture content of the biomass affected the biochar yield. The trial provided insights into the potential utilization of biochar, its production process, and basic economics. The project also highlighted the importance of keeping the biomass clean to maximize biochar production.
- **TakaChar:** The TakaChar trial demonstrated that chipped logging residues could be effectively converted into biochar. The biochar produced had a low moisture content, which is desirable for many applications. However, the prototype's productivity was identified as a potential limitation, especially considering the large volumes of logging residues generated annually in regions like BC.

5.2 Accelerator – South

5.2.1 Combined Heat and Power Academy – Engineering Report and Capital Purchase, Lhoosk’uz Dene First Nation, Williams Lake, BC

The project aimed to establish a Biomass Combined Heat and Power (Bio-CHP) training facility and program at the UBC Research Forest in Williams Lake, BC, in collaboration with Indigenous communities, including Lhoosk’uz Dene, Heiltsuk, Esk’etemc, and Ulkatcho. The project provided equipment and materials to set up the Bio-CHP system, to develop a capacity-building program for training Indigenous participants, and to create a training facility for hands-on operation and understanding of biomass supply chains.

Central Challenge

The central challenge this project addressed is the utilization of residual fibre left behind by wildfires and beetle infestations in a sustainable and economically viable manner. It aimed to find a solution that not only reduced the environmental impact of these disturbances but also supported the economic development of Indigenous communities. By incorporating biomass from these sources into the Bio-CHP system, the project aimed to create value-added opportunities and contribute to climate change mitigation. In addition, rural communities often lack access to reliable power sources. Biomass CHP systems could be a potential solution, but long-term operation and repair of the systems have been problematic, and this project sought to address these issues by training a resilient workforce of Indigenous operators.

Project Outcomes

The project funded an engineering report and equipment purchase, and contributed to the establishment of a Bio-CHP system supported by the development of a comprehensive training program for Indigenous community members. By providing hands-on training and knowledge about biomass supply chains, the project can empower First Nations and facilitate job creation, including enhancing the capacity of Indigenous participants in operating the CHP system. This was a joint project with funding provided from federal programs as well.

5.2.2 Yunesit'in – Housing – Yunesit'in First Nation, Williams Lake, BC

The Yunesit'in community undertook to address the critical housing needs in their remote area. By leveraging standardized components, prefabrication, and innovative design, the project aimed to decrease construction costs by 30% and to achieve 90% energy savings through passive housing standards. The use of mass timber foundations, wood fiber insulation, and dismantle-able connections between panels created a marketable, sustainable, and adaptable housing solution.

Central Challenge

There is a dire housing situation in the Yunesit'in community, posing significant barriers to the well-being and economic development of the community. The high cost of construction, limited access to materials and resources, and energy inefficiency of existing housing options contribute to the housing crisis. The challenge was to find innovative approaches that could provide cost-effective, energy-efficient, and adaptable housing solutions suitable for remote areas.

Project Outcomes

The project funded housing modules, developed for rapid assembly in rural and remote areas. The project trialed sustainable materials including mass timber and wood fibre insulation, and used standardized components and prefabrication techniques. The implementation of passive housing standards, highly efficient building envelopes, and panelized joints provided an example of affordable and sustainable housing options for the community. Additionally, the project established a local manufacturing facility, creating employment opportunities. The longer-term expected outcomes of the overall project include providing over 100 houses, generating profit through the manufacturing business, improving the value chain of wood in modular construction, and ultimately establishing a repeatable housing solution. This was a joint project with funding also provided from federal programs.

5.3 Indigenous Forestry Program – South

5.3.1 Canim Lake – Biomass Roadmap Phase Two: Identifying Feasible Businesses – Canim Lake Band, Canim Lake, BC

The purpose of this project was to craft a comprehensive Biomass Roadmap, from collecting and analyzing data, deeply understanding the unique needs and aspirations of the community, and exploring a spectrum of

economic opportunities. These opportunities included, but were not limited to, the establishment of sawmills, the development of bioheat solutions, firewood production, and various other biomass-based solutions.

Central Challenge

The goal was to identify and develop sustainable economic opportunities for the Canim Lake Band that aligned with their community's needs and vision for their traditional forest lands. Data was needed in order to assist Canim Lake to decide on possible business ventures, including investing in a mill, or creating a firewood operation, or other options.

Project Outcomes

The outcome of this project was the creation of a detailed Bioeconomy Roadmap to serve as a strategic guide, outlining a path forward for the pursuit of specific, carefully selected opportunities. The Roadmap included an assessment of biomass availability and a description of the technical requirements, and it provided recommendations for various business options. Among these options, the production of firewood was highlighted as a viable venture that the Canim Lake Band could undertake. Projects growing out of the Bioeconomy assessment will leverage the rich resources of the land while staying true to Canim Lake Band's cultural heritage and community vision.

5.3.2 N'Quatqua – Sustainable Home Design – N'quatqua First Nation, D'Arcy, BC

The N'Quatqua First Nation hoped to address their housing need by developing a modular housing solution that utilized innovative wood products. This project aimed to create smaller, affordable tiny homes through standardized components, prefabrication techniques, and passive design principles, resulting in decreased construction costs and increased energy savings.

Central Challenge

The lack of adequate housing, particularly smaller, affordable options like tiny homes, poses a significant obstacle to the well-being and quality of life for community members. The project sought to address this challenge by developing a modular housing solution that was cost-effective, energy-efficient, and tailored to the specific needs and cultural considerations of the N'Quatqua First Nation. The project presented the opportunity to use wood products to meet this need, including mass timber as an alternative to conventional foundations.

Project Outcomes

The project funded the design of standardized, prefabricated components that could be easily assembled into affordable tiny homes. The project engaged with the community to identify specific housing requirements, assess local building capacity, establish partnerships to fill capacity gaps, and draft concept module designs and layouts for the tiny houses.



5.3.3 N'Quatqua – Firewood Business – N'quatqua First Nation, D'Arcy, BC

The N'Quatqua First Nation embarked on a project to enhance their firewood business and contribute to the community's well-being. They aimed to improve efficiency, provide firewood to the community, and engage in brushing activities.

Central Challenge

Without the necessary equipment, the operations of N'Quatqua First Nation's firewood business were limited, hindering their ability to meet the demand for firewood and to engage in brushing activities. This challenge was impeding their economic growth and the overall well-being of the community.

Project Outcomes

The N'Quatqua First Nation procured a range of equipment, including splitters, chainsaws, and safety gear. By having the right tools, they are now able to streamline firewood processing, improve productivity, and expand their services to meet the community's needs.

5.3.4 Southern Dakelh Nation Alliance (SDNA) – Biomass Mini-sprint Workshop – Quesnel, BC

The project aimed to support the sustainable development and forest management goals of the Lhoosk'uz Dené, Lhtako Dené, and Nazko First Nations. The objective was to explore the utilization of locally available and sustainable forest biomass resources, including innovative options to reduce dependency on fossil fuels, promote clean energy, create green jobs, and enhance forest management practices in the region. The project involved collaboration between various organizations, including the Southern Dakelh Nation Alliance, the City of Quesnel, industry representatives, and Clean Energy Consulting, as well as the Ministry of Forests.

Central Challenge

This project sought to explore options for utilising under-cut fiber and woody biomass, as a contributor to the transition from reliance on fossil fuels to sustainable forest biomass resources for energy generation and heating purposes in the communities, as well as identifying potential innovative economic opportunities for biomass use. Additionally, it aimed to address the issue of wasted fiber that resulted from regular harvesting and manufacturing processes, identifying economically viable ways to utilize dead stands from fire and beetle kill, as well as efficiently utilizing all parts of harvested trees, while aligning with traditional and ecosystem-based principles.

Project Outcomes

A workshop was supported, where experts and stakeholders discussed supply chain options, feedstock profiles, and potential business opportunities. The workshop provided a platform for information sharing, collaboration, and decision-making. This created a deeper understanding of the interactions between different products and feedstocks, identifying sustainable forest management practices, exploring innovative ways to use forest biomass resources, and fostering economic development through clean energy initiatives. The project resulted in a roadmap that aligned the goals of the communities with the expertise of various organizations involved, in order to foster sustainable practices and to realize a prosperous and environmentally conscious future.

5.3.5 Ulkatcho, Support for Excavator, Ulkatcho First Nation, Anahim Lake, BC

Graham Boys Contracting, a dynamic enterprise owned by a member of the Ulkatcho First Nation, embarked on a journey to expand its operational scope and enhance its ability to undertake a broader array of contracts. Specifically, the company focused its efforts on scaling up its involvement in critical road deactivation and fuel management projects. To realize this objective, Graham Boys Contracting identified the need for equipment enhancements, particularly the acquisition of a hydraulic thumb and a log grapple for their Cat 321 hydraulic excavator. This equipment was a pivotal addition to their existing capabilities.

Central Challenge

The absence of a hydraulic thumb and log grapple presented a substantial barrier to Graham Boys Contracting's growth and operational efficiency. This limitation was most acutely felt in their inability to compete for contracts offered by West Chilcotin Forest Products. Furthermore, the lack of these critical attachments restricted the company's capacity to engage effectively in tasks that are essential for disaster assistance. The hydraulic thumb and log grapple would be crucial in enabling the company to perform specialized tasks, meet the demands of their target projects, and serve the Ulkatcho community with greater efficacy and responsiveness.

Project Outcomes

The acquisition of the hydraulic thumb and log grapple marked a milestone for Graham Boys Contracting. With these enhancements, the company was able to diversify its portfolio and bid on a more extensive range of projects. This expansion was particularly notable in areas such as road deactivation, fuel management, and disaster relief. The increased capacity of Graham Boys Contracting not only augments their business prospects but also plays a vital role in the long-term development and well-being of the Ulkatcho community. The company's growth and enhanced operational capabilities are a testament to the positive impact of strategic investment and the importance of equipping local businesses with the tools necessary to thrive and to contribute meaningfully to their communities.

6. Coast Projects



6.1 Indigenous Forest Bioeconomy Program - Coast

6.1.1 Khowutzun Freegro Tree Shelters – Diagnostic Analysis of Factory – Khowutzun First Nation, Duncan, BC



This project funded the assessment of possible upgrades to Khowutzun Freegro's factory. Khowutzun Freegro Tree Shelters (KFT) is a partnership owned by Khowutzun Development Corp, the economic branch that fosters the success and sustainability of Cowichan Tribes and members. KFT is interested in revitalizing and protecting forests and other lands, and in keeping jobs local.

Central Challenge

Khowutzun Freegro Tree Shelters was faced with a higher demand for products than they could fulfill.

Every year since KFT became a joint venture in 2019 has seen record sales. Forest replanting is well established in the province and increasing, and with the product’s quality track record, the demand for these locally-made KFT seedling shelters continues to grow.

Project Outcomes

An operation overview was commissioned, outlining production levels, diagnostic test runs, and a production increase assessment.

6.1.2 Thunderbird Spirit Water – Forest Botanicals – Uchucklesaht Tribe Government, Port Alberni, BC

Thunderbird Spirit Water is owned by Uchucklesaht Tribe Government (UTG), with offices in Port Alberni, BC. The UTG is a member of the Maa-nulth Treaty, and of the Nuu-chah-nulth Tribal Council. The majority of Uchucklesaht members live in Port Alberni, and the long-term vision of UTG, which has begun a phased approach of implementation, is to support members to live, work, and practice their culture within the Territory, especially at the Uchucklesaht village of Ethlatese. The Uchucklesaht vision is to wisely steward their territories while taking steady, measured approaches to considering new opportunities.



Central Challenge

Thunderbird Spirit Water (TSW) sought to expand its freshwater consumer product lines to include flavourings and/or benefits derived from non-timber forest products (NTFPs), such as forest berries or roots, that occur within the Uchucklesaht Treaty Settlement Lands. TSW is nationally and internationally acclaimed, and there is an opportunity to expand the business, building upon UTG’s skills, experience, and long-term goals.

Project Outcomes

A mapping assessment of the area of interest investigated botanicals and other NTFPs in terms of their abundance and their potential match with existing TSW product lines. The assessment also provided a harvest schedule; which areas of the territory to target first; and which forest species to proceed with in the next phases.

6.1.3 Uchucklesaht – Tannin Extract Study – Uchucklesaht Tribe Government, Port Alberni, BC

This project hoped to clarify the next steps toward a tannin extraction pilot facility. Uchucklesaht Tribe Government (UTG), with offices in Port Alberni, BC, is a member of the Maa-nulth Treaty, and of the Nuuchahnulth Tribal Council. The majority of Uchucklesaht members live in Port Alberni, and the long-term vision of UTG, which has begun a phased approach of implementation, is to support members to live, work, and practice their culture within the Territory, especially at the Uchucklesaht village of Ethlase. The Uchucklesaht vision is to wisely steward their territories while taking steady, measured approaches to considering new opportunities.

Central Challenge

Past research has identified that the tannin in Western Hemlock can be used for multiple applications. Western Hemlock is present across Uchucklesaht's territory. However, knowledge of how best to set up a viable tannin extraction facility is lacking.

Project Outcomes

The study used commercially available technology to prepare a feedstock of Hemlock wood-based hog fuel, and achieved a 7% yield of tannin, which illustrates a need for more targeted testing.

6.2 Accelerator Program – Coast

6.2.1 Huu'ay'aht FN Forestry LP – Timber Tiles Partnership Agreement – Huu'ay'aht First Nation, Port Alberni, BC

TimberTiles is a BC start-up company that incorporates artistic design and modern manufacturing processes into the production of attractive interlocking tiles milled from hemlock end-grain timbers. The product shows promise as a biodegradable building material, utilizing hemlock in a sustainable way, sequestering carbon, and contributing to BC's value-added forest bioeconomy. The project funded Huu-ay-aht First Nation Forestry LP to assist the Nation in acquiring majority ownership in the company, to make export-ready, value-added hemlock tiles directly from the hemlock timber supply that HFN contractors cut each year. Huu-ay-aht First Nation Forestry LP is one of the companies under the umbrella of the Huu-ay-aht First Nation Group of Businesses, which works to enhance the social, economic and environmental well-being of the Huu-ay-aht First Nations through initiatives that provide sustainable benefits for its citizens.



Central Challenge

Huu-ay-aht First Nation Forestry LP wanted to diversify their range of economic options with an export-ready product that fits within their strategic long-term plans; to utilize hemlock in value-added, environmentally responsible products; and to improve local manufacturing capacity and employment opportunities for HFN citizens.

Project Outcomes

The project provided matching funds to HFN so that HFN could acquire a majority stake in ReaplyWOOD Design & Research Inc (TimberTiles) and use their hemlock supply directly in the creation of value-added wood products. HFN partnered with an innovative local manufacturing business to maximize returns on timber harvested, create long-term employment opportunities, and establish new markets for quality products. Next steps include Timber Tiles' promotion of their product to add natural beauty to healthcare, educational, and other workplace settings.

6.2.2 Khowutzun Freegro Tree Shelters – Design and Purchase of Machinery - Khowtuzun First Nation, Duncan, BC

The project entailed the purchase of crucial equipment for Khowutzun Freegro Tree Shelters, a successful business facing high demand for its tree seedling shelters. Khowutzun Freegro Tree Shelters is a partnership owned by Khowutzun Development Corp, the economic branch that fosters the success and sustainability of Cowichan Tribes and their members. The business is interested in revitalizing and protecting forests and other lands, and in keeping jobs local.

Central Challenge

Khowutzun Freegro Tree Shelters (KFT) sought ways to meet the increasing demand for their seedling shelters. A key piece of their specialized equipment was experiencing breakdowns, compounded by the difficulty of finding replacement parts. This challenge threatened the business's fulfilling of orders and capitalizing on market opportunities, hindering their growth and their potential for expansion.

Project Outcomes

The project supported commissioning the design and purchase of a new machine for Khowutzun Freegro Tree Shelters. This equipment upgrade will address the breakdown issues, move toward KFT's meeting of their orders, and enable the business to scale-up its manufacturing operations. It also enhances KFT's capacity to contribute to the forest sector, to economic development, and to the goals of the community.

6.3 Indigenous Forestry Program - Coast

6.3.1 Atli Resources LP – Contractor Diagnostic for Chip Plant – Community Economic Development and Forest Resource Optimization, 'Namgis First Nation, Beaver Cove, BC

Atli Resources LP, owned by the 'Namgis First Nation, acquired a chipping facility in Beaver Cove on Vancouver Island, aiming to provide coastal pulp mills with wood chips and hog fuel generated from salvaging post-harvest residual wood fibre. The project provided a contract diagnostic intended to outline steps toward continuous improvement of the operations and continued business viability.

Central Challenge

There are increasing levels of post-harvest waste in the 'Namgis traditional territory and adjacent licenses. Challenges include environmental hazards such as fuel buildup and forest fire risks, as well as potential air quality risks if fibre is burned. The project aimed to implement sustainable practices, reduce forest wood waste, and create a value-added manufacturing solution.

Project Outcomes

The project report covered human resources, productivity, mechanical availability, and environmental and financial management. Findings showed that productivity had increased, and that down-time had been reduced due to better organization and maintenance infrastructure.

6.3.2 Heiltsuk – Whitewood Program, Bella Bella, BC

The Heiltsuk Nation, located in Bella Bella, BC, aimed to reduce its reliance on external resources by increasing the capacity of its local sawmill. With a feasibility study confirming the economic viability of the sawmill, the project supported a review of the proposed relocation of the mill, to explore opportunities for maximizing the mill's utilization.

Central Challenge

Heiltsuk Nation relies on external resources for their community's wood product needs, and depends on imports. The project aimed to assess the viability of increasing the capacity of the local sawmill and exploring opportunities for maximizing its use, including strengthening the local market, reducing dependence on external imports, and opening new revenue streams.

Project Outcomes

The project evaluated the potential for processing white wood into viable products and considered programs such as alder production and a firewood business for local and regional sales. In addition, the report indicated that moving the sawmill from Bella Bella to Shearwater would require a sustainable cedar program in order for production benchmarks to be met. The report recommended, as add-ons to the cedar business, a shake/shingle business, a firewood enterprise, and a remanufacturing enterprise.

6.3.3 Squamish – Field Service Business, Squamish First Nation, Vancouver BC

The project provided the Squamish Nation Archaeological department (SNA) with the equipment needed to conduct Assessments to identify and manage archaeological sites within proposed harvest areas and ancillary developments, including forestry access roads.

Central Challenge

The SNA department sought to support industry by mitigating the risk of inadvertently impacting on recorded and unrecorded archaeological sites. Unintentional disturbances to these sites could contravene the provincial *Heritage Conservation Act* and result in financial penalties. By being able to conduct Archaeological Impact Assessments, the Squamish Nation aimed to ensure the preservation and protection of its cultural heritage while allowing for sustainable economic activities.

Project Outcomes

Essential equipment was procured, including sediment screening equipment, tripods for hanging screens, shovels, buckets, canopy tents, an excavation kit for controlled trowel excavation, and a wet site conservation kit. The department is now able to identify and manage archaeological sites in the proposed harvest areas.

6.3.4 Toquaht Forestry LP – Sawmill Extension, Toquaht First Nation, Toquaht Bay, BC

With ownership of fee simple treaty settlement lands and various forestry tenures, the Toquaht Nation aimed to expand their sawmilling business and optimize operations to improve efficiency and recovery factors. This project built on the successful development of infrastructure for their forest industrial park, including a sawmill and firewood processor, through federal funding.

Central Challenge

This project aimed to maximize the efficiency and recovery factors of the sawmilling operations. By identifying areas for improvement within the current infrastructure, equipment, layout, and logistics, the Toquaht Nation hoped to address bottlenecks, reduce waste, and increase overall productivity. The challenge lay in finding the most effective and sustainable solutions that aligned with the community's goals, while also considering economic viability and environmental considerations.

Project Outcomes

The Toquaht Nation was able to invest in additional equipment to enhance sawmilling operations. This included advanced machinery, automated systems for sorting and grading lumber, and waste management equipment. Detailed layout planning also optimized the flow of materials and processes within the sawmill, while improved logistics will ensure efficient transportation and distribution. The expected outcomes of these measures are increased productivity, improved recovery rates, higher product quality, and reduced waste, supporting economic sustainability for the Toquaht Nation and in the Barkley Sound area.

6.3.5 Toquaht Forestry LP – Firewood Business, Toquaht First Nation, Toquaht Bay, BC

Building on a 2021 feasibility study on a firewood processing facility, the current project supported Toquaht Forestry LP to operationalize their firewood business. The Toquaht are the people of Toquaht Bay, Mayne Bay and Western Barkley Sound, and are one of the Nuu-chah-nulth Nations.

Central Challenge

The challenges were created by the growing demand for firewood, and the desire to utilize non-merchantable and waste wood from harvesting and dry land sort operations, including tops, long butts, and other low-grade forest residue.



Project Outcomes

The project supported investment in a modern firewood transport unit, including a tandem axle firewood delivery trailer, firewood bay loading tray, and signage for advertising the business.

6.3.6 Tsshaht – Wood Waste Management, Tsshaht First Nation, Port Alberni, BC

The Tsshaht First Nation, in collaboration with Cisia Forestry LLP, sought to implement a wood waste management project by acquiring a firewood processor.

Central Challenge

There was a need to effectively manage the wood waste generated from the timber industry within and around the Tsshaht First Nation's traditional territory. Underutilized wood waste contributed to environmental concerns such as combustion and pollution.

Project Outcomes

Tsshaht acquired a firewood processor, along with other necessary equipment, to efficiently convert the wood waste into firewood cords. This generated revenue and offered training and employment opportunities for Nation and community members.

6.3.7 We Wai Kum – Biomass Inventory Central Island, We Wai Kum First Nation, Campbell River, BC

We Wai Kum First Nation sought to diversify and maximize the economic benefits from the forestry sector within their territory through a biomass inventory and fiber availability analysis.

Central Challenge

The challenge was in understanding how to effectively utilize wood waste for economic benefits within their territory. This included identifying and assessing the availability of wood waste resources, understanding the logistical and operational considerations for collecting and processing the waste, and determining the economic viability of such initiatives.

Project Outcomes

The project gathered data on the harvest queue and road network to develop availability and costing solutions/mapping for biomass fiber utilization. The report identified the extent of old growth referrals' impact on salvage operations, determined the volume of available fiber from Crown land and private landholders, and assessed physical barriers that could impede salvage operations.