OFFICE OF THE CHIEF FORESTER

2023–24

INNOVATION, BIOECONOMY AND INDIGENOUS OPPORTUNITIES BRANCH

BRITISH COLUMBIA | 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 funding programs that support increased economic development and participation in the forest sector by Indigenous people in British Columbia. 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 2023-24 the IFP accepted projects related to conventional forestry, a focus that will be reduced in future years as funding increasingly targets innovative solutions. In order to support projects that qualify for IFBP funding but that are further along in the commercialization process, a third stream of funding, the Accelerator 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 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 a 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 2023-24 cycle by the IFBP include: feasibilities and startups related to non-timber forest products (NTFPs); a ground-breaking scoping study on wildfire damaged timber; equipment and efficiency measures to support value-added manufacturing; and other supports for the development of high value bioproducts. The Accelerator stream funded research and equipment for novel wood products, and pioneered a highly innovative biohub trial that assessed whole-tree trucking. Also, IFP projects, considered at the end of each fiscal year depending upon the availability of funds, supported foundational forestry activities such as scoping environmentally sound methods, and fostering the sale of residual fibre captured from forestry operations.

In the 2023-24 project cycle, the programs:

- Delivered 28 projects: 15 through the IFBP; 4 through the Accelerator; and 9 through the IFP
- Collaborated on these projects with 30 First Nations and 12 Indigenous-owned businesses
- Created 135 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, with funding for the program 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 Bioeconomy Program (IFBP) has supported this development for over a decade through partnerships with over 100 Indigenous communities and/or organisations in forest sector economic development. The 2023-24 annual report marks the fifth iteration of a compendium of projects delivered as part of both the IFP and the IFBP, and has added 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 a 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. 2023-24 marked the fifth 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.

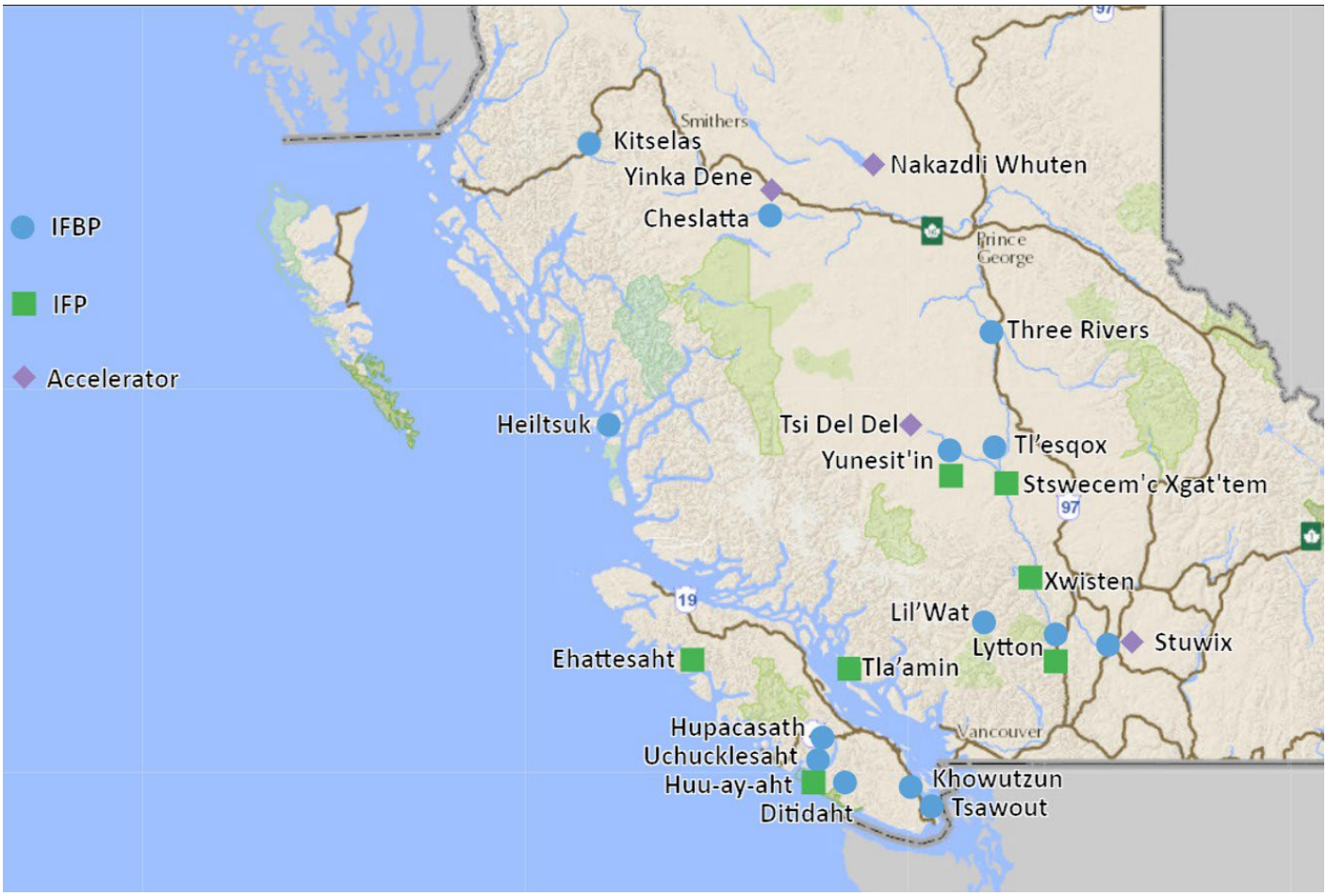
2.3 Report Format

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 2023-24. In Chapter 3, a summary of our aggregated project statistics provides an overall picture of the impacts of all the 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 steam, and the Indigenous Forestry Program (IFP). Individual projects are then described in Chapters 4 to 6.

3.1 Geographic Distribution

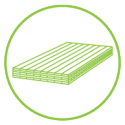


3.2 Community Engagement

In 2023-24, the Indigenous Forest Bioeconomy program engaged with 30 different Indigenous communities across B.C., and successfully delivered 29 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 on Vancouver Island, on the northern coastal area, in the Interior, and in the lower mainland.

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.

1	0	8	5	2	0	4
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.

6	1	1	1
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.

6	2	7	3	4	1	6
Scoping (Research)	Assessment (Feasibility)	Testing/pilot (Prototype)	Validation (Performance)	Demonstration (Proof of concept)	Commercial-ization (Implementation)	Scale-up (Expansion)

3.6 Employment

135 Jobs Created	123 Potential Jobs in Development

4. North Projects

4.1. Indigenous Forest Bioeconomy Program – North

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

The Project undertook a scoping report to evaluate the feasibility of two possible business options and to explore non-timber forest products (NTFPs) on the Cheslatta-Carrier lands. This effort built on a successful previous project that assessed the supply of native plant species and analyzed general market considerations.

Central Challenge

This project aimed to operationalize the Nation's guiding motto of "Footsteps on the land." Building on previous findings, the focus was to identify which NTFPs would be most commercially viable, and to understand the potential costs associated with their development.

Project Outcomes

Following mapping and financial assessments, an Action Plan was generated to guide the community's next steps. A site was chosen and key NTFPs were identified. Marketing was identified as a key future step, along with other practical supports.

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

The Kitselas Development Corporation (KDC) lead a project to create a compost product from local wood feedstocks in the region. The project aimed to develop a low-carbon land reclamation and agricultural soil mixture by using region-specific feedstocks. This initiative not only aimed to mitigate the environmental impact of burning slash pile waste, but also sought to foster sustainability in the forestry sector while creating job opportunities for the Kitselas community.

Central Challenge

This project addressed the significant challenge of reducing the environmental impact of burning slash piles, a common forestry practice that releases harmful greenhouse gases and waste biomass. The KDC aimed to repurpose this waste into a beneficial compost product for land reclamation and agricultural use. However, the project faced challenges in securing consistent feedstock supplies and navigating regulatory requirements. Additionally, the seasonal constraints and remote location of the composting site pose logistical challenges.

Project Outcomes

Initial trials demonstrated the feasibility of producing high-quality compost from local feedstocks. The project successfully engaged community partners and secured support from the Kitselas community. It also created part-time employment opportunities and provided valuable training in composting and equipment operation. Moving forward, the KDC plans to expand the project into a commercial-scale operation, which could significantly reduce greenhouse gas emissions and provide a sustainable solution for biomass waste management in the region.

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 Log Upgrader Front-End Engineering Design (FEED) project aimed to enhance the value recovery from low-quality logs through advanced processing technologies. This initiative involved developing a detailed engineering plan for a log upgrader facility. The project sought to address the challenge of optimizing log usage, to reduce waste, and to support the bioeconomy while fostering indigenous partnerships and creating local employment opportunities.

Central Challenge

The primary challenge of the Log Upgrader FEED project was to develop a viable engineering plan that maximized the recovery of valuable products from low-quality logs, which are typically underutilized or discarded. This involved integrating advanced processing technologies that can efficiently convert these logs into marketable products. Additionally, the project aimed to overcome economic barriers by proving the financial feasibility of the log upgrader facility, ensuring that it could generate sustainable revenue while minimizing operational costs.

Project Outcomes

The Log Upgrader FEED project successfully developed a comprehensive engineering design for a facility capable of processing low-quality logs into high-value products. This design includes advanced technological solutions that enhance the efficiency and output of the log upgrading process. Financial analyses indicated that the facility can achieve economic viability, with projected revenues outweighing operational costs. Moreover, the project facilitated the creation of valuable partnerships with Indigenous communities, fostering local employment and supporting the broader bioeconomy goals of the region. The successful completion of this project sets the stage for further development and implementation, contributing to sustainable forestry practices and economic growth in the local community and beyond.

4.2.2 Yinka Dene Limited Partnership – Capital Purchase for Wood-Fibre Bio-Foam Pilot Plant, Wet'suwet'en First Nation, Burns Lake, BC

The Wood-Based Biodegradable Foam Capital Purchase Project, initiated by the Yinka Dene Economic Development Limited Partnership (YLP), focused on acquiring essential equipment to scale up and commercialize wood-based foam, developed at the Bioproducts Institute (BPI) at the University of British Columbia (UBC). YLP, a Wet'suwet'en business development corporation, owns the Intellectual Proprietary rights on the project, jointly with UBC. This project aimed to establish a pilot plant for biodegradable foam production in British Columbia, leveraging advanced nanotechnology and assembly strategies developed in the lab. The biodegradable foam is envisioned to replace conventional polyurethane and polystyrene foam in the protective packaging industry, contributing to the sustainability goals outlined in the Province's CleanBC Roadmap to 2030.

Central Challenge

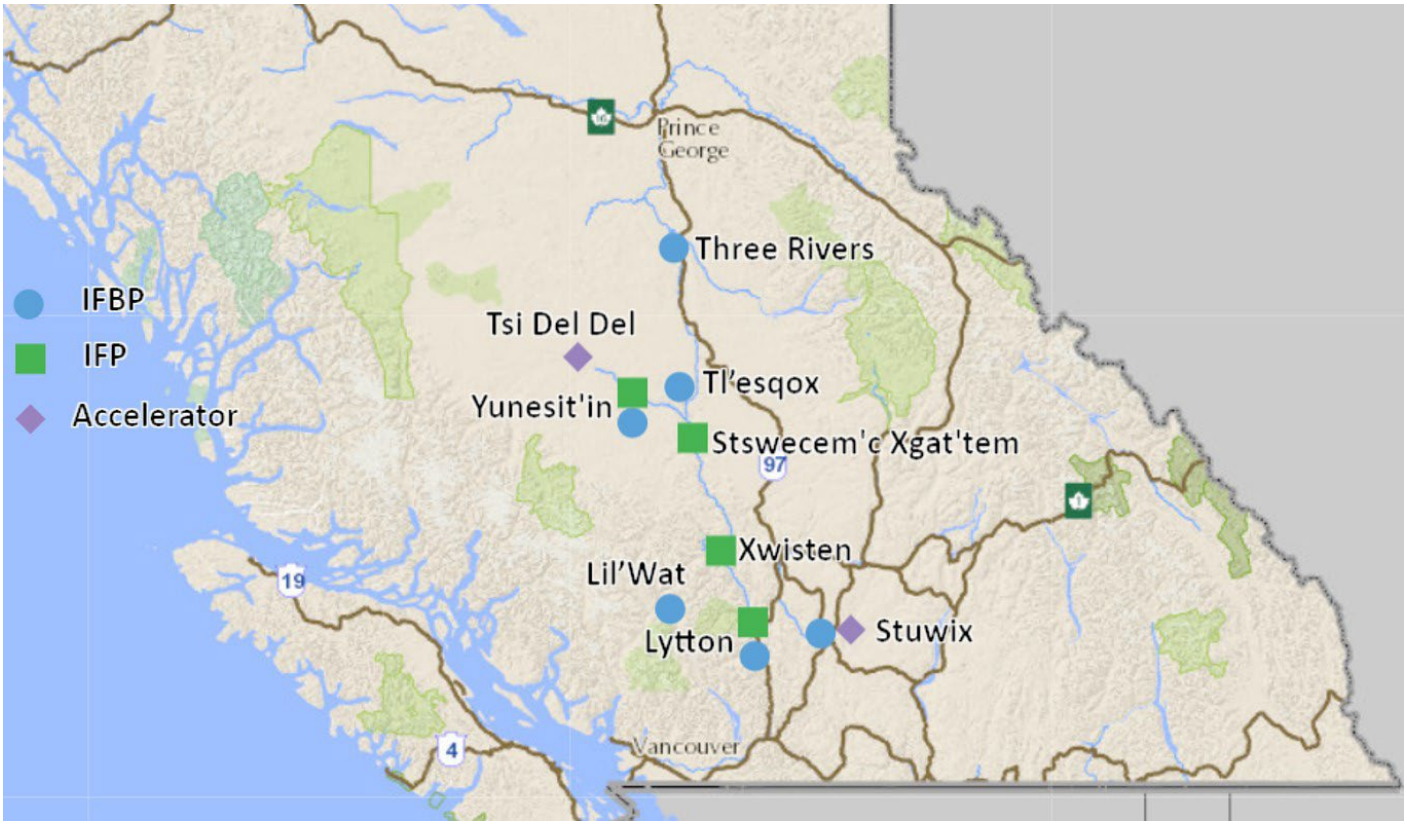
The YLP Biodegradable Foam Capital Purchase project aimed to address several challenges in the production and commercialization of biodegradable foam. Key challenges included the need to procure specialized equipment essential for scaling up production from a lab environment to a pilot plant. The project also sought to meet rigorous standards for mechanical performance, waterproofing, rapid biodegradability, thermal conductivity, fire retardancy, and stability.

Additionally, navigating the regulatory landscape and ensuring that biodegradable foam meets or exceeds all government regulations posed significant challenges. The project also needed to work toward securing sufficient funding and managing the logistics of equipment acquisition, installation, and commissioning within a tight timeframe.

Project Outcomes

The YLP Biodegradable Foam Capital Purchase Project successfully achieved significant milestones in advancing the commercialization of the product. The acquisition of core equipment, including a circulating foam shaping and drying machine, ultra-fine grinder, and biodegradation testing equipment, facilitated the establishment of a pilot production line. Successful outcomes included the demonstration of the biodegradable foam's potential as a sustainable alternative to polyurethane and polystyrene foam, fostering new economic opportunities for the Wet’suwet’en community, and supporting the reduction of greenhouse gas emissions, in sync with CleanBC’s goals. Because Dicin means wood in the Wet’suwet’en language, the newly developed product is to be named DicinFoam.

5. South Projects



5.1 Indigenous Forest Bioeconomy Program – South

5.1.1 Lil'wat Forest Ventures – Carbonator Feasibility, Lil'wat First Nation, Lillooet, BC

The need for clean burning and organic cellulose removal in Metro Vancouver Regional District, Whistler Regional District, and Squamish-Lillooet Regional District has prompted the introduction of the Carbonator, a mobile and robust third-generation commercialized product. Lil'wat Nation hoped to introduce the Carbonator to municipalities and regional districts, to ensure it meets or exceeds all government regulations. The primary objective of the project was to assess the size of the serviceable market and demonstrate the feasibility and advantages of this innovative technology.

Central Challenge

This project aimed to solve clean burning issues for local communities by providing an effective solution for organic cellulose removal and eliminating slash piles. The Carbonator would need to comply with the regulations set by municipalities and regional districts. Additionally, the project sought to overcome the lack of awareness and acceptance of this new technology by demonstrating its environmental and economic benefits. Assessing the size of the serviceable market and identifying potential customers and competitors in the regions were also critical challenges to address.

Project Outcomes

The project introduced the Carbonator to municipalities and regional districts, to ensure that it met regulatory requirements. The market analysis identified significant opportunities for clean burning and cellulose removal in the target regions, highlighting a considerable market. The Carbonator's technology and mobility demonstrated its potential to efficiently process wood waste, reducing environmental impacts and operational costs. The project also fostered partnerships with local governments and stakeholders, and enhanced the acceptance and adoption of the Carbonator.

5.1.2 Lytton – Post and Rail Feasibility - Lytton First Nation, Lytton BC

Lytton First Nation is a culturally oriented community with a strong sense of place, striving to build a strong economy based on the wisdom of the Tl'kemtsin Elders, and the experience and knowledge of leaders and members. This project sought to promote the Nation's goal of ensuring fiscal stability through investigating possible commercial products and enterprises, starting with a post and rail enterprise.

Central Challenge

Lytton was interested in identifying value-added products to be made from their many hectares of timber, while supporting job creation. Key considerations included transportation and processing costs, and the possibility of integrating fire-damaged timber into finished products.

Project Outcomes

The project resulted in a feasibility study for a potential post and rail business. This detailed the inputs and costs, evaluated potential markets, assessed equipment needs, included a CAPEX and an OPEX analysis, and led to an action plan for next steps.

5.1.3 Stuwix – Trial Salvage of Burned Timber, Stuwix Resources Ltd, Merrit, BC

Stuwix Resources Joint Venture, established in 2004, is a First Nations owned and operated fibre management company, structured by eight First Nation Bands (Coldwater, Cook's Ferry, Lower Nicola, Nooaich, Shackan, Siska, Upper Nicola, and Upper Similkameen Indian Bands). An innovative leader in forest resources management, Stuwix's vision is to balance business goals with sustainable forestry practices to promote healthy ecosystems and communities. This project funded a study outlining methods for salvaging fire-damaged wood, and assessing the potential financial and practical implications of applying tree-length (TL) processes to this fibre.

Central Challenge

Building on the Stuwix biohub project where data was collected in harvest operations using a tree-length (TL) system and then processed into various products in a centralized yard, the challenge was to understand how this method applied to fire-damaged standing timber. Fire-damaged and beetle-killed wood is a major concern in the province, and the Stuwix experiment sought to address the question of how this damaged wood could be used.

Project Outcomes

This project captured data that is fundamental to decision-making on the use of fire-damaged wood in secondary products. It explored the market potential, made important discoveries related to equipment and processes, and successfully demonstrated the feasibility of the process.

5.1.4 TRCF – Lignin Plant Project Plan, Three Rivers Community Forest, Quesnel, BC

Three Rivers Community Forest, a partnership among Nazko, Lhtako, Lhooskuz, and ?Esdilagh First Nations, and the City of Quesnel, took the initial steps in enabling TRCF to understand and make decisions related to the relocation of a lignin processing facility from Alberta to British Columbia.

Central Challenge

In an effort to address rapid changes in the forest environment and related issues in the traditional forest-base economy, the TRCF was exploring how best to create new opportunities. Key challenges included: landscape management to produce resilient ecosystems; understanding what transformers would best suit a sustainable fibre supply; and workforce needs.

Project Outcomes

A Lignin Facility Project Plan was created, to guide TRCF in taking the due diligence assessments required to investigate whether a stand-alone lignin extraction plant would be a viable business, and if so, how best to begin the process.

5.1.5 Toosey Old School Wood Products – Equipment for Value Added Manufacturing, Tl'esqox Indian Band, Riske Creek, BC

Toosey Old School Wood Products, owned by Toosey Indian Band (Tl'esqox) employs a "forest to frame" approach to creating high value specialty wood items for both retail and wholesale markets. Their wide range of high-quality lumber includes specialty cuts, posts and beams, and other unique products, complemented by their carpentry services. The project aimed to upgrade the manufacturing capacity of the Toosey Indian Band, building on the results of a Biomass Feasibility Assessment, to produce value-added wood products.

Central Challenge

Demand for a specialty product necessitated acquiring specialized machinery. A workspace was needed, to support immediate production.

Project Outcomes

The cutting edge equipment was sourced, purchased, and installed with a quick turnaround time. The upgrade helped Toosey develop a product line centred around a previously underutilized wood byproduct, thereby enhancing their value-added manufacturing capacity. The project supports economic viability, industry innovation, and reconciliation, by enabling Toosey to meet orders for tongue-and-groove lumber and to gain value from waste wood.

5.1.6 Yunesit'in Leading Edge – Glulam Market Research – Yunesit'in First Nation, Horsefly, BC

Yunesit'in Leading Edge (YLE) manufactures various specialized wood products for both domestic and industrial applications. Consultants were hired to do market research and to delineate and assess the steps toward certification of a novel glue-laminated wood product.

Central Challenge

Leading Edge has been developing their glulam method over several years, and certification was the next step in the process. The task was to evaluate the feasibility of certifying the glulam beams that YLE produces, and to assess the state of their expanding sales.

Project Outcomes

A detailed report proved to be highly useful, complete with a SWOT analysis and recommendations for market access. The report found that Leading Edge is well positioned to contribute to the sustainable development of this area of the construction sector.

5.1.7 Yunesit'in Leading Edge – Engineering Report – Yunesit'in First Nation, Horsefly, BC

Yunesit'in Leading Edge (YLE) manufactures various specialized wood products for both industrial and domestic applications, including glulam beams. Besides beams, their products also include doors, flooring, siding, shiplap, furniture, interior finishing, specialty sheds, and other items. This project sought to analyse their glulam equipment needs, and to design an upgrade.

Central Challenge

The challenge was to streamline and mechanize operations, in order to foster business growth while enhancing safety.

Project Outcomes

The project funded an engineer to design the technical improvements. The equipment upgrade that was designed in this project positions YLE to meet increased demand, tackle large projects, and stay competitive in the market. It promotes YLE's commitment to innovation in the value-added wood product market.

5.2 Accelerator – South

5.2.1 Stuwix – Biohub Pilot, Stuwix Resources Ltd, Merrit, BC

Stuwix Resources Joint Venture, established in 2004, is a First Nations owned and operated fibre management company, structured by eight First Nation Bands (Coldwater, Cook's Ferry, Lower Nicola, Nooaich, Shackan, Siska, Upper Nicola, and Upper Similkameen Indian Bands).

The BioHub Pilot Project, conducted by Stuwix Resources Joint Ventures (SRJV) in Merritt, British Columbia, is an innovative initiative aimed at enhancing the utilization of forest products and providing local employment. Initiated in 2022, the project now entered Phase II, focusing on validating the scenario results that had been modeled in Phase I. The current phase involved collecting data from harvest operations using a tree-length (TL) system, and processing various products in a centralized yard in Merritt. The goal was to process residual material that was otherwise typically left in the field, to reduce waste and improve environmental outcomes.

Central Challenge

The main goal of the BioHub project was to overcome inefficiencies in traditional cut-to-length (CTL) operations by enhancing the utilization of forest residues typically left in the field and burned. By processing residual materials into valuable products including chips, hog fuel, mulch, and others, the BioHub aimed to reduce waste and increase revenue. The project also sought to prove the feasibility of the BioHub as a standalone business model that can provide local employment and support better forest management practices. Challenges addressed by the BioHub project included accurately comparing the costs and revenues of the BioHub/TL system to those of CTL operations.

Project Outcomes

The BioHub Pilot Project Phase II successfully demonstrated the feasibility of processing a variety of products that would otherwise be lost in standard CTL operations. The project showed that it is possible to achieve a surplus by running the BioHub. In addition, the BioHub provided significant environmental and social benefits, including reduced smoke production and greenhouse gas emissions from slash pile burning, improved social acceptance, and enhanced wildfire risk reduction. The initiative also supported job creation and better forest management, aligning with SRJV's goals. The positive outcomes have garnered support from SRJV's Board Members, and further assessments will determine the feasibility of incorporating the BioHub/tree-length system into future harvesting schedules.

5.2.2 Tsi Del Del Dev Corp – Portable Tipper – Tsideldel First Nation, Chilanko Forks, BC

Tsi Del Del Development Corporation, a company owned by Tŝideldel First Nation, collaborated with industry partners to test the viability of a Resilient Biomass Supply Centre in 94 Mile House. The

project's goals were to address the issues of zero waste harvesting, fibre availability, fibre logistics optimization, and collaboration and reconciliation. Tsi Del Del Development Corporation has expertise in fibre hauling through its work at the Central Chilcotin Rehabilitation Centre, and it wanted to leverage this expertise to trial a Resilient Biomass Supply Centre.

Central Challenge

Through the Resilient Biomass Supply Centre, Tsi Del Del Development Corporation aimed to aggregate, store, and dispatch optimally produced biomass products, such as hog fuel, bush grind, etc from various sources to maximize the RBSC profits and minimize transportation and loading costs. Further challenges were the province-wide need to reduce fire hazards, and the possibility of salvaging wildfire damaged timber in future. The project sought to create efficiency, implement zero waste forestry practices, and reduce slash pile burning.

Project Outcomes

Tsi Del Del Development Corporation purchased a portable flail chipper for the Resilient Biomass Supply Centre (RBSC) to optimize fibre utilization. The equipment enabled the expansion of the RBSC's business to more industry partners and created jobs.

5.3 Indigenous Forestry Program – South

5.3.1 Lytton – Equipment for Firewood Business – Lytton First Nation, Lytton, BC

Lytton First Nation is a culturally oriented community with a strong sense of place, striving to build a strong economy based on the wisdom of the Tl'kemtsin Elders, and the experience and knowledge of leaders and members. This project funded a firewood enterprise that used wildfire-damaged inputs and other lower value fibre.

Central Challenge

Following severe wildfires that swept through the area, the challenge was to find a way to quicky generate income for the community, and to set up a lasting business. In addition, LFN wanted to find ways to use their standing fire-damaged and beetle-killed timber.

Project Outcomes

The project funded equipment to be used in a new firewood enterprise. A facility was created for producing firewood, and the business is operational.

5.3.2 Skywest – Capital Purchase for Residual Fibre Removal – Stswecem'c Xget'tem First Nation, Dog Creek, BC

Skywest, in partnership with Stswecem'c Xget'tem First Nation, provides road maintenance services, including removing wood fibre from the roadsides.

Central Challenge

With roadside vegetation needing upkeep, and with new business opportunities provided by a major utilities company, the challenge was to find the right equipment to keep up with the increased demand for service.

Project Outcomes

The project funded the purchase of equipment, allowing for business expansion, and improving efficiency and safety.

5.3.3 Xwisten – Equipment for Firewood Business – Bridge River Indian Band, Bridge River, BC

The project supported Xwisten's purchase of firewood processing equipment. Xwisten's goals were to increase the existing facility's capacity to produce firewood, process different types of fibre, and increase the capacity to sell firewood outside of the community.

Central Challenge

Xwisten's existing facility had limitations in the types of fibre it could process, and it mainly produced firewood for community residential heating. Large amounts of waste fibre from forestry operations were being burnt as slash piles, and Xwisten wanted to this while selling firewood in the market.

Project Outcomes

The equipment (a Live Deck In-Feed processor and a Log peavy) will enable Xwisten to increase the existing facility's capacity, process different types of fibre, and better utilize the waste fibre.

5.3.4 Yunesit'in Leading Edge – Equipment for Value Added Wood Manufacturing – Yunesit'in First Nation, Horsefly, BC

Leading Edge (YLE) manufactures a wide range of specialized wood products for both industrial and domestic applications. Their offerings include beams, doors, flooring, siding, shiplap, and consumer products such as chairs, benches, and specialty sheds. Three integrated projects were undertaken to enhance productivity, operational efficiency, and safety, through the acquisition of new equipment and technical upgrades.

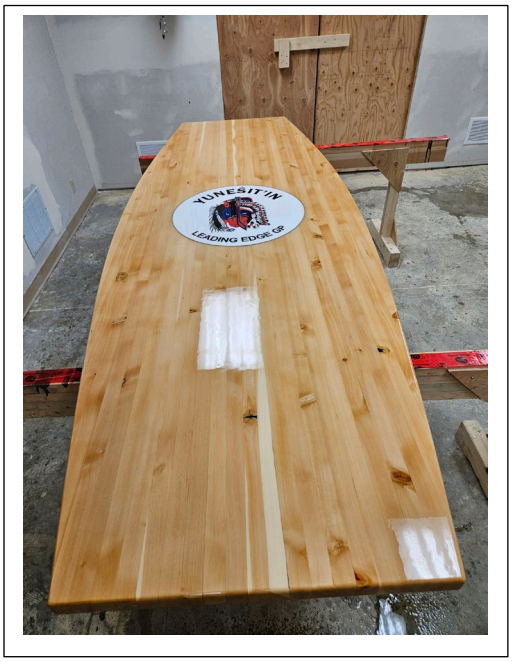
Central Challenge

YLE faced challenges in improving its operational efficiency and productivity. These included the need for equipment to speed up the onsite movement of wood inputs, machinery to capture and utilize residual fibre, and overall technical upgrades to modernize the existing systems. Additionally, outdated machinery presented potential safety concerns and barriers to meeting the increasing demands for their specialized products.

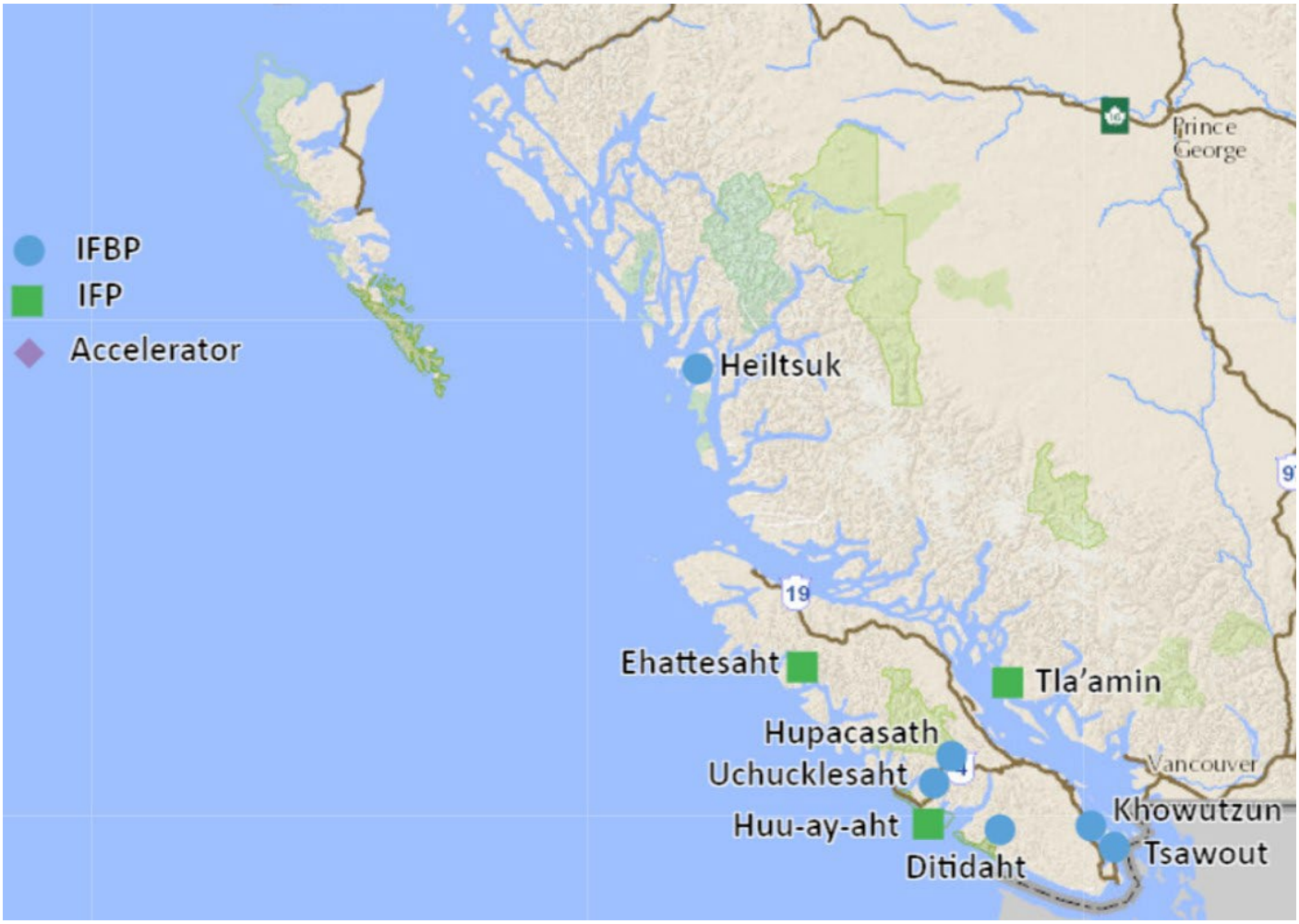
Project Outcomes

The combined efforts of the projects resulted in significant improvements for YLE:

1. Productivity Enhancements: Equipment was purchased to facilitate the movement of wood inputs, along with machinery for processing residual fibre, boosting both productivity and safety.
2. Operational Efficiency: Modern equipment was installed to produce value-added wood products such as flooring, panelling, and siding, thus enhancing efficiency and expanding the capacity to meet existing orders.
3. Technical Upgrades: Upgrading the functionality and safety of vital equipment increased production of key value-added product lines and created more economic opportunities for YLE and the Yunesit'in community.



6. Coast Projects



6.1 Indigenous Forest Bioeconomy Program - Coast

6.1.1 Ditidaht – Bioeconomy Assessment – Ditidaht First Nation, Nihtnaht Lake, BC

A study was undertaken to identify possible projects in forest bioeconomy that would suit Ditidaht's interests, location, biomass supply, and market possibilities.

Central Challenge

Ditidaht is located near the West Coast Trail, and the opportunity and challenge were to understand how to benefit from being near this local tourist route, as well as other possible bioeconomy ventures.

Project Outcomes

The project report outlined such potential businesses as value-added wood production, items for purchase by tourists, and greenhouses, as well as ways of using residual fibre generated in the forest industry. The development of non-timber forest products (NTFPs) was chosen as the first business opportunity to be pursued. Next steps include mapping NTFPs in the area, and creating an actionable feasibility study.

6.1.2 Heiltsuk – Carving Tools and Shed – Qqs Society, Heiltsuk First Nation, Bella Bella, BC

The Qqs Projects Society is a charitable non-profit. With a holistic mandate to support Heiltsuk youth, culture, and environment, Qqs focuses on creating opportunities for Heiltsuk youth and families to learn on the land. The current project intended to support the youth group's production and sale of wooden consumer goods and carved items.

Central Challenge

While many youth are interested in trades and woodworking, a more suitable space was needed for them to work in. The previous building had been damaged in an extreme weather event, necessitating refurbishment.

Project Outcomes

The project supported the construction of a carving shed, and the purchase of equipment and tools for the youth to work with. This enhanced the group's sales as well as supporting training and knowledge transfer.

6.1.3 Hupacasath – Maple Syrup Equipment – Kleekhoot Gold, Hupacasath First Nation, Port Alberni, BC

Kleekhoot Gold has produced syrup from BC maples for almost ten years, with ever-increasing knowhow, production, and sales. The Alberni Valley provides ideal conditions for many coastal tree species, including the flourishing BC Bigleaf Maples.

Central Challenge

Kleekhoot Gold is at the forefront of this new industry, and are challenged with leading implementation on the west coast. The effects of the pandemic negatively influenced production. However, the learning that came out of the situation led to an interest in making technological upgrades.

Project Outcomes

New equipment was purchased, and upgrades were made to production. The project brought many aspects of the operation up to the best industry practices, and supported the future of this unique product.

6.1.4 Khowutzun – Efficiency Upgrades – Khowtuzun Freegro Tree Shelters, Khowutzun Tribes, Duncan, BC

The project made practical improvements on the factory floor in order to advance the efficiency of the operation. Khowutzun Freegro Tree Shelters (KFT) is a partnership owned by Khowutzun Development Corporation, the economic arm of Cowichan Tribes. The tree shelters support the forest industry with clients throughout the province.

Central Challenge

Faced with a high volume of orders, KFT sought ways to optimize their production through their factory organization. An important goal of KFT was to keep jobs local and to retain their skilled staff, while maintaining the high quality of their product.

Project Outcomes

The project resulted in significant adjustments to warehouse operations and the production line, addressing barriers to efficiency and offered systematic solutions, as well as outlining new markets, supporting a foundation for the continued growth and success of KFT.

6.1.5 Tsawout – Biomass Analysis – Tsawout First Nation, Saanichton, BC

Through a biomass assessment and value analysis, the project aimed to investigate potential bioeconomy options, to energize discussions on new ideas, and then undertake a preliminary market analysis. The Nation's intention was that recommendations would align with Tsawout's deep respect for the lands and their guiding principle of respect and care for the community and for future generations.

Central Challenge

The project addressed a strong interest from Tsawout to explore the potential economic benefits that can be derived from the Nation's lands. There was a need to find ways to diversify and maximize the sustainable benefits from the forest resources, especially given the Nation's bridging of forested lands and urban economic zones.

Project Outcomes

The project report included detailed ecosystem information, residual fibre volumes from forestry, and the abundance of non-timber forest products (NTFPs). This included a risk/benefit analysis for some of the finished products to be derived from key species observed during the mapping phase. From this, Tsawout was able to assess its options and discuss an action plan for next steps.

6.1.6 Uchucklesaht – NTFP Feasibility – Thunderbird Spirit Water, Uchucklesaht, Port Alberni, BC

The project undertook two studies in order to determine the commercial potential of naturally sourced non-timber forest products (NTFPs). This included both a mapping project and a scientific analysis of food-grade flora. Thunderbird Spirit Water is owned by the Uchucklesaht Tribe Government (UTG), which is a member of the Maa-nulth Treaty, and of the Nuu-chah-nulth Tribal Council.

Central Challenge

Uchucklesaht Tribe Government is committed to safely and carefully stewarding its traditional lands, and hoped to integrate aspects of this into their current flourishing business involving freshwater consumer products. The Uchucklesaht vision is to wisely steward their territories while taking measured approaches to considering new opportunities. Because the lands are so rich in resources, a study was undertaken in order to help focus in on potential inputs.

Project Outcomes

The completed project produced two consulting reports pertaining to the mechanics of the proposed process. Trial groups and taste tests aided Uchucklesaht to narrow down their list of the possible NTFPs to be explored. Thunderbird Spirit Water ascertained the next steps in the project, purchased equipment, and began planning future action items.

6.2 Indigenous Forestry Program - Coast

6.2.1 Ehattesaht – Feasibility on Barge Hauling – Strategic Natural Resources, Ehattesaht First Nation, Zeballos, BC

Strategic Natural Resource Consultants is owned by the Ehattesaht Chinekint First Nation, with offices in Campbell River, Nanaimo, and Port Hardy. They applied to undertake a feasibility study so that Aat'uu Forestry Ltd could optimize their logging operations while promoting safe environmental practices.

Central Challenge

The challenge was to make operations more efficient while also protecting ecologically sensitive marine environments. Ehattesaht's goals were to participate in sustainable methods of perpetual timber-harvesting and to prioritize innovative forest management practices that could minimize environmental impacts and increase employment.

Project Outcomes

The feasibility report that resulted from the project evaluated how logging activities could benefit the Nation while respecting the local environment. It included considerations of harvest, and financial, operational, and environmental issues. It positioned Aat'uu Forestry to decide on next steps, in keeping with Ehattesaht's guiding belief: "All things are connected; everything is one." The project found that there could be benefits from log barging compared to booming.

6.2.2 Hu'uay'at –Equipment for Drying – Timber Tiles, Hu'uay'at First Nation, Port Alberni, BC

Timber Tiles, manufacturers of subway-tile sized interior wall cladding, is majority owned by Hu'uay'at First Nation. The project related to expanding production capacity.

Central Challenge

The success of Timber Tiles had grown quickly, and they were facing increased export demand. This necessitated assessing efficiency improvements and then carrying out equipment improvements.

Project Outcomes

The project funded a dip-coating system, from prototype research into production. While hand coating had been labour-intensive, the new system creates consistent penetration and full sealing, with options for surface texturing, termite protection, and other benefits.

6.2.3 Tla’amin – Equipment for Firewood Enterprise, Thichum Forest Products, Tla’amin First Nation, Port Alberni, BC

The project supported Tla’amin’s zero waste policy implementation through a capital purchase, enabling them to create commercial firewood from post-harvest waste in their forest tenure.

Central Challenge

The project sought to enable the Nation to commercialize their firewood business and utilize wood waste from their forest tenure. The project would support the Nation’s zero waste program and reduce carbon emissions through prevention of slash pile burns.

Project Outcomes

Tla’amin Nation purchased equipment that improved the transportation and distribution of wood fibre, and contributed to the success of their firewood business.